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ART. I.—*Cases of Amputation in Private Practice.* By WILLIAM M. BOLING, M.D., of Montgomery, Alabama.

A comparison of the success attendant on any particular operation, or class of operations, in private practice, with that in hospitals, would, perhaps, not be entirely devoid of interest. One element for such comparisons can readily be procured from the numerous publications of cases, and tabular views by hospital surgeons and physicians; but as in private practice the number of operations of any particular kind, performed by any one operator, must generally be limited; no comparison can be instituted from the published cases of any one. By taking the aggregate of cases published by a number of individuals, such comparisons might be made.

It seems to be a common impression, that the result of operations is generally more successful in private, than in hos-

pital practice; the advantages of the latter, arising from the greater dexterity of the operator, from frequent practice, being, it is said, more than balanced by the better air, &c., of private abodes.

In looking recently over the few amputations performed by myself, I was surprised at the great proportionate mortality, and for this reason only thought of offering them for publication; believing, however, that the average mortality of a larger number of cases, collected from private practice, would be much less.

Operations performed in hospitals are generally done by men in the daily habit of operating; conseqently the patient has all the benefit of that manual dexterity which is given by practice. This, however, is more limited than at first thought one would suppose, as the manner, in regard to neatness of execution, in which an operation is performed, and the time occupied in it, will, as a general rule, have very little influence over the ultimate result: not that operations are not occasionally performed so badly as to influence the result, but this is rarely the case. True, the practiced surgeon will perform an operation in a few seconds less of time, and may separate parts with the knife at two strokes, which would require three from one of less practice. He will do it too with apparent ease and facility, while to the other it appears a work of labor; still the issue perhaps is not influenced by this once in a hundred operations. But what is of infinitely more importance, as influencing the general result, is the knowledge acquired by practical experience, of the cases suitable for operations, under what circumstances an operation would be useless or hopeless, and the proper moment for its performance when decided upon.

Hospitals being always located in cities, consequently within the reach of many, nearly all the operations which are required for accidental injuries may be performed almost immediately after the infliction, and before constitutional disturbance from inflammation, gangrene, &c., can arise—a matter of no small importance in many instances. While in

private practice, or rather the country portion of private practice, the patients frequently being at a distance, this cannot be accomplished. Hospital patients have generally the advantage of the constant presence of a physician, or well qualified student, in case of any unforeseen accident or emergency. They have also the benefit of experienced nurses, who know their duty, and are satisfied with performing it, and no more; while the patient in private practice has to contend with that pest of society in general, and of sick persons and physicians in particular, the would-be doctresses—the old women, (old men, in this respect, occasionally put on the petticoats,) with her all-curing poultices, plasters, 'dr*a*ps,' or clysters.

The circumstances which are supposed to favor the result of operations in private practice, are these: The patients are said generally to be of a class superior to those of hospitals; but superiority in rank or wealth does not necessarily imply superiority in morals or habits, and the advantage in such cases depends solely on the constitution of the patient—whether impaired or not by vicious and immoral habits—for the hospital patient, after he becomes such, has all the advantages of nursing, attendance, &c., procurable by the generality of patients in private practice.

There is probably but little difference in the constitutional peculiarities, as produced or modified by the habits or morals of the individuals themselves, of patients in private and in hospital practice. I speak here in relation to operations required on account of injuries received from external violence of any kind, and more especially with reference to southern practice. The ruffian or bully, who receives his stab or gunshot wound at an election brawl in the country, a subject for private practice, has a constitution perhaps as much impaired by excess and dissipation, as the subject for hospital practice, who receives his injuries at a city bagnio or drinking-shop.

If, in the south, the patient in private practice has the benefit of any constitutional superiority, it is in the case of the

negro. The regular alternation of labor and rest, a due supply of wholesome nutriment, want of care and mental anxiety, and above all, an entire absence of those effects produced by excessive indulgence in intoxicating drinks, and dissipation generally, place him, in regard to constitution, far above the white laboring classes of the larger cities. In a practice of ten years in Alabama, I have neither seen nor heard of a case of delirium tremens in a slave. The greater liability of the negro in the south to tetanus, after injuries, admitting the supposition to be correct, may probably overbalance this advantage.

The great advantage to patients in private practice, of a purer air than that of hospitals, cannot be questioned.

The danger of the hospital patient is much increased by his exposure to contagious diseases, more especially erysipelas, which in some hospitals has, heretofore, if such is not even yet the case, added materially to the mortality arising from surgical operations. This is perhaps the only real and decided advantage of the patient in private practice, while the disadvantages under which he labors are numerous. I do not here take into consideration the *luxuries* of a sick room, but have reference merely to the necessaries calculated to influence the result. The former, of course, can only be procured in private practice, and among the wealthy.

Case I.—W. C., a stout, healthy farmer, about 35 years old, received in his left arm, on the 15th of July, 1837, a wound caused by the discharge of a gun containing 21 buckshot, and a rifle ball. The muzzle of the gun was within six feet of him at the time it was discharged. The load was received on the anterior surface of the forearm, about two inches below the elbow joint, shattering both bones very much, splitting the upper end of the ulna (as was afterwards discovered) as far up as the joint, and carrying several fragments with it, as it passed out from the posterior face of the arm. The muscles were almost entirely divided; the lower portion of the arm with the hand, hanging literally by two

small strips of skin, one on the radial, and the other on the ulnar side of the arm. The hemorrhage was considerable.

On the 16th, I was called to see him, but as the messenger was unaware of the extent of the injury, and as the request was to come and *set* a broken bone, I went unprepared for amputating. The distance was eighteen miles, consequently I could not procure my instruments in time to operate before the following morning.

On the morning of the 17th I amputated the arm by the circular operation about two inches above the elbow joint. He recovered in a reasonable time without any unfavorable symptoms. The stump was a bad one in consequence of a redundancy of integuments.

Case II.—A negro man, 30 years of age, has had a large ulcer of many years' standing, causing swelling of the foot and leg from a short distance below the knee to twice the natural size. It causes him much pain and constitutional disturbance, and seems incurable, as numerous and continued efforts have been made for that purpose.

He was a patient of Dr. Holt, at whose request, January 30th, 1841, I amputated the leg a short distance below the knee, by a modification of the circular operation, leaving the skin and mass of muscles forming the calf of the leg considerably longer than the integuments anteriorly.

According to the method of Liston, we did not attempt to dress the stump for several hours after the operation, and in doing so found the sensibility of the parts augmented to such a painful degree, that we had to desist till the patient could be brought under the influence of a large dose of tincture of opium. The slightest effort to lay the parts in apposition, caused violent spasmodic action in the muscles, in consequence of which every arterial branch was caused to throw out blood profusely, and he lost more during the few minutes we were making the attempt, than he did during the operation. This one experiment of the kind satisfied me.

The integuments were rather short, and the stump healed slowly.

Case III.—A negro girl, about 11 years old, received in the bottom of her foot a puncture with a nail. By neglect and mismanagement the foot was caused to mortify. The principal part of the mischief was probably done by dipping it in concentrated ley, such as is used in families for making soap.

Probably about three weeks after the injury, Dr. Ames was called to see her, and at his request I visited her with him a day or two after, for the purpose of amputating the limb. The whole foot was then destroyed; the bones protruding at various points, and mixed with the sloughing flesh, constituted an indiscriminate mass of fœtid rottenness. Her emaciation was extreme, and there were several abscesses on various parts of her body, (the consequence of purulent absorption), from which pus was profusely discharged. Her pulse was small, quick, and corded; skin hot and dry; countenance anxious and haggard. So extreme was her debility, that it was a question between Dr. Ames and myself whether she could sustain the loss of blood necessarily attendant on the operation, husband it as we might.

July 6th, 1841. The amputation was performed some distance below the knee, and notwithstanding every precaution, the loss of blood was much more considerable than we had anticipated. Perfectly thin, and almost colorless, it oozed from every point of the cut surface. By the use of stimulants, however, she sustained the operation, notwithstanding the loss of blood. It was my intention to have made a flap posteriorly, but there was nothing of which to form it, the small mass of muscle, not larger than a man's finger, merely filling the space behind, between the tibia and fibula. The circular operation was performed.

Contrary to all expectation she recovered. The principal remedies employed by Dr. Ames in her treatment, were I believe, bark, wine, and rich soups.

Case IV.—January 8th, 1842. A negro boy, about eight years old, while gathering chips near where another was chopping wood, placed his hand in the way of the axe as it descended, by which it was nearly severed from the arm, obliquely through the wrist joint. The part by which it remained adherent was composed of a small portion of integument, and tendinous and muscular structure on the radial side of the joint, in which remained probably undivided the superficialis volæ. The radial and ulnar arteries were both divided. Dr. Ames (whose patient he was) placed the parts in apposition, and dressed them in such a way with sutures, adhesive strips, and bandage, that the cut surfaces were kept neatly and accurately in contact. By the second day, however, it was sufficiently evident that union of the parts was impossible, and at Dr. Ames's request I amputated by the double flap operation just above the joint. There was, as Dr. A. informed me, considerable constitutional disturbance; so much indeed as to render the result doubtful for several days; after which the progress of the case was favorable, and the parts united in a reasonable time.

Case V.—October 1st, 1841. I visited, at a distance of ten miles, a negro woman, 28 years old, who four days previously had her hand and fore arm torn and mangled in a most shocking manner, by being caught in a cotton gin. She was under the care of Dr. Roberts, in whose opinion, that amputation was necessary, as there was much swelling even above the elbow joint, and the parts below sloughing rapidly, I entirely concurred. Accordingly I amputated by the double flap operation, immediately above the elbow joint. No unfavorable symptoms supervened after the operation; those previously existing were soon relieved, and in the usual time the parts had healed.

Case VI.—October 28th, 1842. A negro woman, about 35 years of age, subject to epileptic convulsions, during an attack, fell into the fire and burned her hand and wrist

so badly that the parts were almost completely charred through.

On the 31st, I visitid her with Dr. McWhorter, and amputated by the double flap operation midway between the wrist and elbow.

She lived twelve miles from town, and Dr. McWhorter did not re-visit her till the third day after the operation, having left directions with the overseer of the plantation, in regard to her treatment. He found her laboring under tetanus, which, from what he could learn, had supervened the day before. She died the day after his visit.

Case VII.—A robust young man, about 21 years old, on the night of the 7th of August, 1843, received a charge of fifteen buck-shot from a gun, which was accidentally discharged while the muzzle was resting in his left axilla and the breech on the floor. The load passed in a mass, grazing the anterior and inferior portion of the humerus, immediately below its head, dividing the artery, veins, nerves, and other soft parts so as completely to denude the bone in that situation. He bled profusely, but the hemorrhage ceased on the supervention of extreme fainting, and the application of some masses of raw cotton to the wound by the bystanders.

Dr. Jones, who resided at a distance of about seven miles, saw him several hours after the accident, at which time he still continued extremely faint. There was neither sensation nor circulation in the arm. As the hemorrhage had not returned, the wound was not disturbed.

On the evening of the 8th, Dr. Smith who resided at a distance of fourteen miles from the patient, saw him; at this time there was incipient gangrene of the arm.

On the night of the 8th, I was requested to visit him, but as he resided some twenty-six miles from Montgomery, I did not see him till 10 o'clock on the morning of the 9th. I found him with a hot dry skin; eyes glassy and brilliant; lips pale and exsanguineous; pulse 120; countenance extremely haggard and anxious. The whole arm was a swollen livid

gangrenous mass. The skin covering the shoulder joint above, and the upper portion of the deltoid muscle only had a healthy look and feel; the parts beneath being emphysematous, even a little way above the point at which the appearance of the skin was natural. There was no line of demarcation between the diseased and the healthy parts. We concluded to amputate, as offering a desperate but only chance for life.

A little after 10 o'clock, A.M., he took 60 drops tinct. opii, and a short time before 11 o'clock 30 drops more. At 11 o'clock he was laid on the operating table on his right side, with his head and shoulders a little elevated, and supported with pillows. Dr. Smith compressed the subclavian artery with his thumb, as it passed over the first rib, while Dr. Jones supported the arm. Grasping the mass of muscle and integument covering the shoulder joint with my left hand, I passed a long straight amputating knife through from behind forward, between the acromion process and head of the humerus, cutting out as large a flap as the condition of the parts would admit. As I made the cut, several small arterial branches, near the posterior border of the axilla, threw out blood; and as it was important to economize the vital fluid as much as possible, before proceeding further, I applied ligatures to the two larger, and twisted one or two smaller ones. With a scalpel I next opened the capsular ligament divided the tendons inserted into the tuberosities of the humerus, and raised the head from the glenoid cavity. I now dissected carefully the soft parts from the anterior and axillary aspect of the bone, so as to enable me to grasp with the finger and thumb of my left hand, the mass containing the divided end of the axillary artery. Holding the artery secure in this way, I passed the knife round the head of the bone, and directed its edge downwards so as to divide the posterior border of the axilla, and the ragged remains of the anterior border, separating them clear up to the body, so that their cut edges might be on a level with the parts separated by the shot, and form together a smooth and continuous sur-

face, to be covered by the flap from above. One or two more little arterial branches bled, but were immediately tied; after which I proceeded to apply a ligature to the axillary artery, from which not a drop of blood was lost during the operation. With a pair of strong sharp scissors I cut several ragged projections of integument and muscle, which were in a gangrenous condition, from the lower part of the wound. The flap being drawn down was adapted to the raw surface, which it fitted accurately, by a few sutures and adhesive strips. Over this, lint was applied and secured by several adhesive strips.

He bore the operation with much firmness, making scarcely any complaint. At its conclusion he was much exhausted, his body being covered with perspiration, and his pulse weak, and near 160 in frequency. Frictions with dry mustard and flannel were ordered, and wine ad libitum. This, however, he took with much reluctance.

As it was important that as little blood as possible should be lost, the operation was tedious, as arteries, which, in a patient in a less exhausted condition, would have received no attention, were secured as fast as cut. The time occupied in the operation, dressing the wound, and fixing him comfortably in bed, was about 45 minutes. He lost about six ounces of blood.

He took stimulants of any kind with extreme reluctance, and though for a short time was apparently rallying, died about six hours after the operation.

Case VIII.—A stout, robust, and healthy negro man, about 25 years old, received on the 1st of September, 1843, a heavy charge of bird-shot on the posterior and outer portion of the right leg, midway between the knee and ankle. The muzzle of the gun was so close to him at the time, that the charge was not 'scattered,' but entered as it were in one mass. About an inch and a half above where the shot struck, the fibula was broken, and at the point, a large mass of muscle with its integuments, shot entirely away. About eight

days after the accident, the parts having previously swollen very much, mortification commenced in the skin and fascia, at a point between the wound and knee. The swelling of the parts and sloughing continued, and on the 15th I visited him in consultation with Dr. Shoaler, from whom I received the above history.

I found the whole mass of muscle forming the calf of the leg completely denuded of its integuments and fascia, which had sloughed away, and jutting out prominently as if protruded by something lodged beneath. The parts below were swollen and cold, and at one or two points emphysematous. The denuded muscle and cellular tissue, had in some places a sloughy appearance, and the integuments were in the same condition, on the internal surface of the limb, as high up as the inner condyle of the femur. There was much constitutional disturbance and fever, the pulse being 120 in the minute.

He had the character of being a bold, daring, and turbulent fellow, and received his wound while engaged in some rebellious conduct, in which he tried to excite the other slaves of the plantation to join him; nevertheless, at the proposition for operating, he expressed the utmost fear and horror, and actually shewed a disposition to conceal himself to avoid it.

Previous to the operation, he took about half a grain of morphine, and some brandy—of the latter he drank frequently during the time of its performance.

The circulation was arrested with a tourniquet, and the operation performed by making the flaps from the internal and external parts of the thigh, a short distance above the knee. By his struggles the tourniquet became displaced, and as I divided the parts for the internal flap, the blood gushed in a small stream from the popliteal artery; as the vessel was however immediately caught by Dr. Shoaler between his finger and thumb, scarcely any blood was lost. Before proceeding further I applied a ligature. The cellular tissue at the point between the flexor muscles had a sus-

picious appearance, and was accordingly removed with the scissors.

Though during the operation he lost but little more than a pint of blood, by the time the dressings were applied, he had sunk into a state of the most extreme collapse; being nearly speechless, with a small, quick and weak pulse, and his whole surface bathed in a profuse cold perspiration. By the assiduous use of brandy internally, and frictions with dry mustard externally, he revived.

As he lived at a distance of fifteen miles, I did not see him again, but was informed subsequently by Dr. Shoaler, that the parts sloughed near the place from which the cellular tissue had been removed with the scissors, and that secondary hemorrhage to a considerable extent supervened about the sixth day. He, however, eventually recovered.

Case IX.—Nov. 20th, 1845. I visited a negro man, 30 years old, residing about ten miles from town. Six years previous to my visit a wagon ran over his right leg, midway between the knee and ankle, producing a severe compound comminuted fracture. At the end of three years from the receipt of the injury, he was able to move about a little on the leg; but it was crooked and shortened, immensely swollen, and the soft parts unhealed. Up to the time of my visit he continued to use the leg more or less, but it caused him considerable pain and constitutional disturbance, keeping his system all the time in a febrile state. After going about on it a month or two at a time, he had generally been compelled to take his bed, and remain at rest eight or ten days at least, on account of the extreme suffering thereby produced. The soft parts have never healed.

At present, the leg is swollen to more than twice the natural size. The muscles, cellular tissue, &c., seem agglomerated into a dense mass, having a semi-cartilaginous feel. A small portion of integument and the muscles beneath, posteriorly, just below the knee, have a more healthy appearance. The part, however, is covered with large varicose veins.

There is an ulcer on the inner side of the leg, midway between the knee and ankle, larger than a man's hand, from which exudes a thin, ichorous matter in profusion.

Both the patient and his master were anxious to have the leg amputated, and at as early a period as possible; as they intended soon to remove from the State, and wished to have the parts healed before commencing the journey,

For the purpose of allaying constitutional disturbance and febrile excitement, I confined him to bed, applied emollient poultices, and administered occasionally a small dose of calomel with opium, to be followed by a mild laxative.

As the parties were urgent for the operation, somewhat against my inclination I concluded to perform it on the 29th. There still existed some feverishness of his system, and he had a slight cough, though with the stethoscope no evidences of disease of the thoracic viscera were discoverable. At the earnest solicitations of both patient and master, though contrary to my own judgment, I consented to operate below the knee.

To procure any thing like a sufficiency of even tolerably healthy integument and muscle to form a covering for the stump, I had to operate as near the joint as possible. The knife was passed behind the bones high up, and as much of the parts posteriorly as presented any approach to a healthy appearance formed into a flap. A small flap of integument was also formed anteriorly, and the bones divided immediately below the tibial insertion of the ligamentum patellæ. The artery was divided immediately below its bifurcation, consequently I applied the ligature immediately above. The *venous* hemorrhage was most profuse, in consequence of the varicose condition of the veins, and the unhealthy indurated tissue in which they were lodged, preventing their collapse. In spite of an elevated position of the stump, pressure, &c., they continued to pour forth blood so profusely from their rigid, patulous, and gaping orifices, that to prevent his dying on my hands, I had to apply ligatures to several of them.

Almost exhausted myself, and my two assistants, Mr. McWhorter and Mr. Gindeet, students of medicine, in the same condition, at the end of about an hour and a quarter from the commencent of the operation, the hemorrhage was arrested and the stump dressed.

The patient's pulse, 80 before the operation, at its close was 120, and rather weak, and his skin cool and moist, though he was much less exhausted than I expected he would have been, from the loss of blood, which must have exceeded three pints.

Though the flap was large enough, had it been more healthy, to have covered the stump, yet in consequence of its extreme rigidity, it failed to meet the integuments anteriorly by nearly an inch. Both during and after the operation, I much regretted that I had yielded to the solicitations of the parties to perform it below the knee.

Dec. 2d. Dressed the stump to-day. It has by no means a healthy appearance. The flaps will not meet, and there is a thin serous, unhealthy discharge from the wound. Pulse 110; tongue rough and dry; slight cough. ℞ Hydrarg. subm. ʒss., pulv. opii gr.iii. M. and div. in partes iv æqual. One to be taken every night and morning. Flaps to be held together by moderately drawn adhesive strips, and the stump to be kept enveloped in soft soothing poultices, which are to be frequently changed.

4th. Pulse 96; tongue less dry and rough; appearance of stump slightly improved.

7th. Being unwell myself, Mr. McWhorter, an intelligent and well read pupil, visited him, and dressed the stump, and from his report I judged that he was in rather an improving condition.

On the evening of the 8th he died. All that day he appeared as well as he had been at any time since the operation. Towards evening he complained a little of pain in his breast, made a sudden spring out of bed, and died in less than an hour—speaking no more, but requiring several per-

sons to hold him. The account of the manner in which he died, I received from his master.

Case X.—February 26th, 1844. A large and powerful negro man, 26 years old, was placed under the care of Dr. Baldwin and myself for the purpose of having his leg amputated. His master, who lived at a distance, gave us the following particulars. About eight years ago, in falling a tree, he received an injury on the anterior part of the right leg, a short distance above the ankle joint in front. The bone was not fractured, but several small pieces had at different times exfoliated, and were discharged. The wound never healed, but improved a little once or twice. On the whole, however, the general course has been from bad to worse, and there is now an open ulcer larger than a man's hand, on the anterior and external surface of the leg, above the ankle. There are no sinuses or fistulous openings leading to necrosis or caries of the bone. The whole foot, and the leg commencing about six inches below the knee, are much enlarged, being perhaps twice the size of the sound one, and have an indurated feel, not unlike that of case ix, but in a less exaggerated degree. Always after taking any unusual exercise, the limb becomes more swollen and painful; his system feverish; and he is compelled to keep his bed for several days.

In preparing him for the operation, the parts assumed an improved appearance, and after some entreaty his master gave a reluctant consent to have an effort made to cure the leg without amputating.

By constitutional remedies, the horizontal posture pretty steadily observed, and the use of bandages principally, he was discharged cured sometime in March, 1845. The cicatrix had a tender appearance, and the greater part of it was about the color of the healthy skin of a white man; no deposition of pigmentum nigrum having taken place.

On the 20th of September following his discharge, he was returned to us with his leg in about as bad a condition as

when first placed under our care, having become sore soon after his return home.

Oct. 1st. To-day I amputated, a short distance below the knee, forming a large posterior flap of integument and muscle, and a small anterior one of integument. The parts fitted accurately, and in three weeks had healed entirely; the principal part by the first intention. He returned home well in a month after the operation.

Of the ten cases of amputation above related, three, it will be seen, proved fatal, forming a proportion of one in every three and one-third cases. One died of tetanus; another under peculiar circumstances, though from what cause I will not pretend to say, as I did not examine the body after death, and received but an imperfect account of the symptoms at the time from the patient's master. The other fatal case was one in which the most sanguine could have had but a faint hope of success at the time I saw him.

I am satisfied that an aggregate of the cases of amputation from the private practice of a number of physicians, would give a much smaller proportionate mortality than the above, and that any inference drawn from the results in so small a collection would be erroneous. One fatal case in every ten would probably be nearer the truth.

March, 1846.

ART. II.—*A Case of Epilepsy in a Boy, successfully treated.* By Dr. THOMAS C. OSBORNE, of Erie, Alabama.

Servitus, a boy 5 years of age, well grown, and sprightly, was attacked with epilepsy in 1843, without any apparent cause. For more than two years the disease continued to recur periodically, and, in most instances, at the time of the full moon, though a few times at other lunar periods. Al-

ways for some days before an attack his bowels were observed to become costive, the stools being scanty. hard, and clay-colored. The paroxysms commenced before he awoke in the morning, or immediately after he rose from bed, and continued to recur regularly every two hours until night, attended by exhaustion, and moroseness of temper. The fits lasted about one minute, and were followed by a profound sleep for half an hour, from which he uniformly awoke complaining of pain in his head. In a short time another followed, but in the intervals, he was conscious of what had occurred, and had a presentiment of what was approaching.

The phenomena frequently observed in one of the paroxysms were, lividness of the lips, pallor of the face, copious secretion of saliva, a vacant and fatuous stare, slight tremors, accelerated pulse, suspended respiration, and convulsive efforts to swallow. If sitting in a chair when a fit came on, he leaned forward, pointing his finger, as if coursing some object around the room, the agitation of his body and convulsive action of his throat being greatly increased by the erect posture. Once while thus sitting his mother spoke sharply to him, at the same time touching him on the shoulder, whereupon he started up, looked around him, drew a long breath, and complained of feeling sleepy; the fit was dispelled.

The boy had been treated by two physicians before I saw him; the first treated the case as epilepsy dependent on worms; the second regarded the liver as being in fault, and shaped the treatment accordingly. It was in April, 1845, that the case was placed under my direction. I inserted a seton in the nape of the patient's neck; and prescribed the following pill:—nitrate of silver one-fifth of a grain, extract of gentian two grains; one to be taken three times a day.

May 12th. The patient has experienced a paroxysm of the disease. I ordered the nitrate of silver to be increased to ¼th of a grain in the pill, and the pills to be continued. The magneto-electrical machine was applied, one wire to the nape of the neck, and the other carried successively over

the front of the neck, pit of the stomach, and right hypochondrium. This application was directed to be made two days preceding each change of the moon; and calomel in doses of two grains, was given morning and evening for three days previous to each such period.

June 12th. The lunar period has passed, and the boy has not been affected by one of his paroxysms. The same treatment to be continued.

July 12th. No return of the disease. Continued the treatment.

August 12th. As he remained free from all symptoms of disease, the treatment was suspended; but in September he had a recurrence of the malady, and the use of the pills and electricity was resumed.

Nov. 12th. To-day he was seized, contrary to the previous progress of his disease, between the full and last quarter of the moon. I now ordered a renewal of the seton, and that the pills should be given for a longer time before the expected paroxysm, the amount of nitrate of silver in each to be increased to one-third of a grain.

From that time to the present, a period of nearly six months, he has remained free from the complaint.

May 8th, 1846.

REVIEWS.

ART. III.—*Caloric, its Mechanical, Chemical, and Vital Agencies in the Phenomena of Nature.* By SAMUEL L. METCALFE, M.D., of Transylvania University. Two volumes, octavo. pp. 1100. London. 1843.

When estimated as an aggregate, by the value in detail of its *inherent qualties*, and by the peculiar nature of certain incidental circumstances which unite with those qualities in giving character to it, this cannot fail to be regarded, by competent judges, as one of the most extraordinary productions of the kind that has issued from the British press during the nineteenth century. Had we said, that has issued from *any press* during *any century*, whose history makes a part of recorded knowledge, it would not be easy to fasten on us the charge of either error or extravagance. We, at least, are compelled to think so, after a very careful examination of the subject. For, were we now called on, to indicate its *superior*, or even its *equal*, in most of the characteristic attributes here contemplated, we would not very promptly accept the invitation. And the ground of our hesitancy would be the difficulty of the task. In illustration and proof of this early commendation we shall offer, for the present, but a few remarks, reserving a full exposition of the subject to throw light on sundry topics designed for consideration in subsequent parts of this article.

As an *inquiry in physics*, we remember no instance, in which the work before us has been surpassed on sundry

points in *depth* and *solidily;* and we challenge refutation, when we add, that, in the *compass and grandeur of its outline, it cannot be surpassed.* Of this latter assertion, unqualified as it *is*, and tinctured with *dogmatism* as it may possibly *be deemed*, the truth is indubitable, and the reason plain.

Not content with merely accompanying astronomers in their excursions through the heavens, from satellites to planets, from planets to comets and nebulæ, from them to suns and astral systems, and to all other *visible* bodies—not content with this range through "starry space," the *inquiry* leaves far behind it not only the Newtons, Laplaces, and Herschels themselves, but also the reach of their most powerful glasses, and terminates its career only at the boundry of *material creation.* Nor do we thus express ourselves in the language of either figure or fancy, but in that of sober and unexaggerated truth. And it need hardly be added, that, to human research, the *passage* of the boundry, to which the inquiry thus extends, is irrevocably interdicted to human research, by the limited capacity of the human intellect.

But this interdict, positive and immutable as it is, imposes on the inquirer, in his philosophical investigations, no *actual privation or restraint.* Though it bars him by an outline, beyond which conjecture itself can never penetrate; yet within that line lies a field (most of it still untrodden) containing "ample room and verge enough," and enriched by a store of the choicest objects of research, sufficiently abundant, to afford endless action and enjoyment to all the most high-gifted minds and ambitious spirits, that can ever engage in the exploration and culture of it.

Of this truth no writer is more thoroughly informed than our author; nor has any one more highly and justly prized the knowledge of it, or made more earnest and persevering efforts to employ it in the production of useful results. Nor is this all that truth permits and duty impels us to say on the subject.

A mere ambition to distinguish himself in the higher walks

of physical science here referred to, is not the only aptitude to that effect which Dr. Metcalfe has manifested. Far from it. Yet it *is* an aptitude of no ordinary significancy and value; because, without *an ambition to excel*, no one will ever toil after excellence, and of course will never attain it. For it is as certainly and necessarily the product of toil, as is day-light of the presence of the solar rays, and darkness of their departure. But our author, as will hereafter more conclusively appear, has other fitnesses beside ambition. He has shown uncommon *ability* in the performance of his part, in the great enterprise of cultivating and improving the knowledge of nature, which is rapidly shedding so pre-eminent a lustre on the nineteenth century. And that ability indicates in him no less the existence of a strong, penetrating, and well disciplined intellect, than it does the possession by him of an inextinguishable thirst for knowledge, an industry in pursuit of it which never faulters, and a resolution to master it which no difficulties or privations can subdue. And such, as will be evinced, by facts to be presently adduced, are the mental characteristics he has abundantly manifested, in his laborious preparation of the work we are examining. Were we, from what we know of the history of that preparation, to attempt the composition of a motto for Dr. Metcalfe, expressive of the determination he fostered, the labors he accomplished, and the obstacles he encountered and vanquished in the course of it, we do not perceive that we could acquit ourselves better, than by recommending to his adoption the following words:—AUT VICTOR ET FAMA, AUT VICTUS ET NIHIL —for *self-sacrifice* or *success* was obviously the end he held constantly in view.

We hold it not impossible, that a few of the foregoing remarks will be regarded, by some persons, as more in the style and spirit of eulogy, than of criticism or review.—Should such be the opinion of individuals or the public; though, as far as *words* are concerned, it will be allowed to pass unnoticed; yet shall it be met and refuted by *facts*. Special references to Dr. Metcalfe's volumes will be made,

and numerous passages extracted from them, fully sustaining us, in the favorable sentiments we have expressed in relation to him.

As far as we are at prosent informed on the subject, he has taken the lead in one of the boldest projects that the votaries of *physical science* ever *have* instituted, or ever *can*—an attempt to solve at once the most recondite and momentous problem in the economy of nature. Our allusion is to the effort he has made, in the work we are examining to prove CALORIC to be what logicians term the VERA CAUSA —the *prime* and *immediate instrument* employed by the Deity, if not in the *production*, at least in the *original arrangement* and subsequent *government* of the material universe. To adopt the Doctor's own language, the more certainly and definitely to express his meaning. He has first virtually represented caloric as the only *self-moving material* substance in creation, every other sort of matter being held *motionless* either by *its own nature*, or by something tantamount to a *vis inertiæ*. Resting on this position as *a fact*, he has next attempted to prove his *self-moving* article to be the efficient and immediate source of all the "*mechanical, chemical, and vital agencies in the phenomena of nature.*" In other and perhaps more explicit and definite terms, to be the MATERIAL VICEGERANT of the Deity, in every movement that occurs in the UNIVERSE OF MATTER—whether that matter be *organized and living*, or *unorganized and dead.*

Such is our author's theory. And whether it is the pure product of reason and philosophy, or, to some extent, the creature of fancy and fiction, we may perhaps hereafter hazard an opinion. At present however we shall only say (but we say it *confidently*) that the fearless effort of the writer, which critics of a colder temperament and more cautious disposition may probably pronounce extravagant and unsafe (if not still *more condemnable*) is, in our estimation, indicative of an exceedingly rare expansion of mind and loftiness of purpose, boldness of enterprise, and sublimity of thought. And it need hardly be even surmised, much less maintainted by

argument, that, without such mental attributes, success in *new and arduous branches of knowledge* can never be achieved. For, to such achievement, ambition and enthusiasm, intrepidity and firmness of purpose are no less essential than they are to the attainment of success in any other form of enterprise, whether in civil or military life. And though we do not contend that Dr. Metcalfe has been successful in the execution of his entire scheme of inquiry, yet does truth compel us to say, that he has thrown more light on many parts of it, and treated the whole of it with more ability, than any other author, whose writings we have examined. In no ordinary degree has he thus benefitted science by his masterly effort. Nor does the benefit conferred on it by him consist alone in what he has himself performed. He has presented to the ambitious an example that will be followed. He stands therefore in the attitude, and character of a public teacher, the most valuable portion of whose instruction to the community consists in his inducing others to instruct themselves, infusing into them a spirit of emulation, and communicating to them judicious directions to that effect.

Other philosophical naturalists, therefore, awakened to action by the example of Dr. Metcalfe, will not fail to engage in the inquiry, in which he has so ably and creditably preceded them. And, whether they concur with him, or oppose him in opinion, the issue will be the same. Further light will be elicited, by their labor, and science and the interests of mankind will be subserved.

Another trait which adds not a little to the extraordinariness of the production before us is the depth of its erudition, and the immense amount of knowledge it embodies in so moderate a compass. It ranks with the most erudite works we have ever perused. Nor is the *derivative* knowledge it contains of a common order, or extracted from common sources. On the contrary, it is itself of the highest and choicest kind, and is drawn from the most substantial authorities. It is not groundless eulogy, but sober truth, to say of it, that not a little of it has descended to us from the ablest

and most highly and justly accredited authors of every civilized and enlightened country, and of every age, from the earliest era of the history of science and letters, to the present period.

It commences, as far as they are known, with the sentiments of men most noted for knowledge and wisdom among the Egyptians, Chaldeans, and primitive Jews, passes to the sages and philosophers of Greece and Rome, when they were the guiding lights of the world, and pays a due and not unprofitable regard to the few scattered and twinkling stars in the science of the Dark Ages. Commencing again with the revival of letters, the author makes deeper and more valuable draughts on those who from age to age, have written on the subject of his own researches. And it is especially at this period, in the progress of science, that his selections of knowledge begin and continue to be made with great judgment, and applied to the object he has in view with a corresponding degree of aptitude and force. He has here shown himself to be thoroughly acquainted with the writings, and their bearing on the subject of his inquiry, of Paracelsus, Van Helmont, and Stahl, comprehending as well the wild and evenscent notions, as the sound and lasting philosophy of those illustrious men. Nor is he less familiar with the works, their applications and value, of Copernicus, Galileo, Kepler, Newton, Laplace, and the Herschels in astronomy—with those on chemistry by Black, Lavoisier and Laplace, Priestley, Davy, Berzelius, Liebig, and Farraday—with those on geology by Cuvier, Lyell, and the geologists generally of Great Britain and France—with those on physiology, by Muller, Tiedemann, Magendie, and Carpenter—with those of Homer, Pindar, Virgil, Shakspeare, and Milton, in poetry—with those on mental philosophy by Locke, Brown, Gall, Spurzheim, Combe, and phrenologists in general—with those of Bacon, which embrace much of the philosophy of every department of nature—and with those of scores on scores of other authors (all of them distinguished) whose names a want of time and room forbids us to recite. And singular as it

may appear, notwithstanding the immense variety, and the difference from each other, of the subjects on which those several authors have written, and the different modes in which they have treated them, Dr. Metcalfe has extracted from each of them matter illustrative of his theory of caloric, and, as he believes and ably contends, in confirmation of its truth. Such is the plastic and assimilating power of his mind, that he derives for his theory nutriment from every department of science and letters—the writings of the apostles and prophets not excepted.

This leads us to give another very striking representation of the work we are considering. It may be regarded, much more than any other production of the sort and size we now recollect, as *an epitome of an entire library of a very elevated and rare description*—of such a library indeed as does not, we apprehend, exist in the United States. Yet, so ample are the resources, and so dextrous the management of our author, that he has reduced it, vastly diversified as it is, to what may be called (if the phrase be admissible) a *multiplex unity;* by making it all bear directly or indirectly on a single subject—*his belief in the universal agency of caloric.*

Notwithstanding, however, the large amount and manifold sorts of *derivative matter*, which our author has embodied in his work, it is not to be inferred that he has not also manifested in it much independence and *originality* of mind. Far otherwise.

It need hardly be remarked, that originality, in the examination and discussion of subjects, is of two kinds. Of these, one consists in the discovery and employment of *new facts;* and the other in the placing of *new constructions* on facts already known—or the drawing from them of *new inferences*, by means of new associations and arrangements of them.

Of his possession, to an unusual extent, of the *latter* of these forms of originality, Dr. Metcalfe has exhibited in his volumes an abundance of testimony. And we need not remark, that, in doing so, he has shown himself to be endowed

with a much higher order of talents, than he would have done, by merely giving evidence of his possession alone of the *former*. By industry, labor, and steady perseverance, a *common mind may discover and amass facts*; but nothing inferior to the mind of a *philosopher* can analyse, interpret, and classify them, and apply them to the high and important purposes, for which they may be fitted. To the simplest observer *steam* has been long known to exist, and to possess no inconsiderable power of action. But, it required the genius of a Watt or a Fulton to perceive the numerous and invaluable uses which it now subserves, and to devise and direct the means for the proper application and employment of it. School-boys had, no doubt for centuries, been in the practice of amusing themselves by the raising of kites; but it belonged to a Franklin to employ that simple piece of machinery in disarming the thunder-cloud. And instances to the same effect might be indefinitely adduced. Nor are we able to call to mind any writer who is richer in the knowledge of them, or more dextrous in the application and use of them, than Dr. Metcalfe. By such dexterity he often illustrates and strengthens momentous opinions by facts known to every one. and usually regarded as trivial and insignificant. Of this the following is an instance, which, whether conclusive or not, bespeaks a mind abounding at once in ingenuity and resources.

The Doctor contends that caloric is the immediate and efficient cause of every form of attraction—centripetal, cohesive, chemical, and vital. And he thus applies it to account for that of cohesion.

Between the particles of *dry* pulverized earthy matter, whether silicious, aluminous, calcarious, or of any orher description, there exists no attraction. Hence dry weather and dusty roads are inseparable concomitants. But a fall of rain or a dash of water in any other way produces in the condition of things an entire change. Immediately the attraction of cohesion binds together the *wetted mass;* and, instead of continuing dusty, the roads become muddy. In other words,

their surface becomes adhesive and tough. And, without expounding his scheme of reasoning on the subject, we shall simply observe, that, in perfect conformity to his general doctrine, and with no little address and ingenuity, Dr. Metcalfe attributes the change to the action of caloric. And, on the same principle does he explain the well known *fact*, that *hot water* penetrates and softens substances, and dissolves all such as are soluble in it, much more speedily and completely, and also in larger quantities than *cold* water. The solution is attributable to the attraction of caloric for the substance dissolved.

There is attached to Dr. Metcalfe's work another peculiarity, which adds not a little to the extraordinariness of its character, and the interest it is calculated to excite, especially in the West. And not in the West alone, but throughout the whole of the United States. We allude to the history of its authorship, which, in some of its elements, is all but romantic.

Dr. Metcalfe is a native of Kentucky, where he was born and received the rudiments of his education, before that State had completely shuffled off the sobriquet of 'Back-woods;' when schools of learning there were but little else than a name; and when, in the entire region, there existed nothing that could be called a library, and but few readers of such books as could be found—when in fact the buffalo, the bear, and the Indian had not yet entirely retreated before the hardy hunters of the frontier.

Notwithstanding this want of instruction, example, and other incentives to awaken it, our author exhibited, from his boyhood, a taste for letters. In testimony of this, and as the fruit of it, he wrote and published, when but a youth, a sketch of the life and adventures of that prince of pioneers and rangers, Daniel Boone. And though that production manifests something of the *germ of scholarship* and *Belles Lettres*, yet may it be stated with sufficient correctness, that nearly the whole of those accomplishments, as a

writer, for which he is now so conspicuous, is the product exclusively of his subsequent labors.

The Doctor, as the title-page of his volumes shows, was graduated in medicine in the Medical Department of Transylvania University. He received his degree in that institution, in the spring of 1822 or 1823, and soon afterward removed to the State (*Territory* we believe at the time) of Mississippi, where he married, and, for several years, pursued industriously and successfully a professional life. But he was never, as we have been informed, content with his situation and prospects in that place, chiefly because his opportunity for the cultivation of the branch of science, in which he most delighted, was very limited and unpromising. Accordingly, on the death of his wife, which occurred a few years after his marriage, he abandoned his establishment in the south, and removed to the city of New York, in the hope of being able there to prosecute his favorite study, with the aid of all requisite advantages, to the completion of his design. But he found in a short time that he was mistaken, the libraries of that city being insufficient for his purpose, on account of not containing many of the works which it was necessary for him to consult. Having remained there, for a few years, and published a pamphlet on Caloric disclosing the nucleus of his views respecting its agencies in the economy of nature, he sailed for England, we believe, in the year 1835, to continue in London, aided by the libraries and other resources of that metropolis, his inquiries into the same subject.

As matters eventuated, that may be regarded as the boldest movement of his life, and the most striking feature in the history of his researches. Without the slightest indulgence in a spirit of exaggeration or undue compliment to our author, it may be compared to the course adopted and pursued, in quest of knowledge, by Pythagoras, Thales, Plato, Hippocrates, and other philosophers and sages of Greece; when they visited for that purpose Egypt, and other enlightened portions

of the East, and long remained in them for the completion of their designs. Like them Dr. Metcalfe visited foreign countries, because they opened to him sources of knowledge far superior to those he could have access to at home, and actually remained there a *self-expatriated* sojourner, for the protracted period of *ten years.* Nor did he thus virtually exile himself for the enjoyment of what the world calls pleasure and amusement—except that he converted into sources of such enjoyment, his *researches and studies*, which, to ninety-nine persons out of every hundred, would have been *serious* and very *unwelcome labor.* He experienced, moreover, during his long residence abroad, inconveniences and evils other than those of mere expatriation. It is no *disparagement* to him, but the *reverse*, to say (and it may be truly and emphatically said) that he perseveringly adhered to his resolution and labors, amidst occasional pecuniary embarrassments and wants, to which, without incurring degradation, the concomitant of irresoluteness and pusillanimity, or the slightest charge of a deficiency of manliness, the stoutest and hardiest spirit might have yielded. But he determinately met and vanquished all the difficulties that lay in his path, finished his task, and returned to his native country, bearing on his brows, in no ordinary degree both rich and rare, the bays of victory, bestowed by foreigners. For foreigners have not withheld from the product of his labors an abundant tribute of approbation and praise. Much more therefore should that production receive, from the justice of his countrymen, the reward to which it is so eminently entitled.

Such then is the work of Dr. Metcalfe, hastily and somewhat desultorily described—and such a few of the reasons why we have pronounced it an "extraordinary production." And we cannot here refrain from repeating, what we have already less confidently intimated, that none but the high qualities of mind and spirit, which our author exhibited, during the entire period of his scientific enterprise, could have borne him successfully and triumphantly through it. We

bodies. The cardinal facts which connect its agency with the general theory of physics, may be reduced to the following propositions:

"1. That the activity or moving power of all bodies, is directly in proportion to the amount of caloric around their particles:—

"2. That all molecular motions, whether centrifugal or centripetal, may be resolved into the law by which caloric repels its own particles, and attracts those of ponderable matter, with forces that vary inversely as the squares of the distance:—

"3. That the quantity of motion in the world, whether mechanical, chemical, or vital, is in proportion to the mean temperature of different latitudes, ceteris paribus, and diminishes from the equator to the poles:—

"4. That the centrifugal force by which planets are impelled through their orbits, is directly in proportion to the heating power of the sun; and like gravitation, is inversely as the squares of the distance:—

"5. That the aggregate vital energy of animals, and the development of their organization, are exactly in proportion to the amount of caloric obtained by respiration, and combined with their tissues:—

"6. That every variety of electricity is convertible into caloric, and the latter again into electricity; consequently, that they are modifications of one and same principle:—

"7. That the directive power of the compass needle diminishes from the isothermal equator to the points of lowest mean temperature, which are the magnetic poles; and that all its variations correspond with the variations of terrestrial temperature:—

"8. That caloric is the active principle in light, whether radiated from the sun, or generated by ordinary combustion, friction, percussion, phosphorescence, or the electric discharge.

"That caloric is a self-active principle, which [illegible]

"For example, under the ordinary pressure of the atmosphere, and at, or a little below the temperature of 32°, the particles of water exist in the solid and apparently fixed state. But if 140° of caloric be added, their mobility is so far increased that they glide freely over one another, and assume the fluid form. If more be added, their activity is still further augmented by every degree of temperature, up to the boiling point, when the whole is found to be in a state of rapid intestine motion. And if at this stage of the experiment, the water be kept over a furnace, until it has received about 1000° more of caloric, the boiling liquid is converted into steam, the moving force of which is exalted by every addition of this active principle, which has the power of converting all other bodies from solids into liquids, vapors, gases, and flame, or luminous incandescent particles."

Were we about to invite the truly philosophical mind to an intellectual banquet of the highest order, we could not perhaps better accomplish our purposes, than by recommending to it a careful perusal—not to say *study* of every paragraph, from page 12 to the close of this chapter, which ends at the bottom of page 46. Although the pages referred to are interspersed with a few sentiments, in whose correctness we cannot concur—that is a consideration to which, at the present moment, we attach no weight. We are now speaking of *manner* and *character*, rather than of matter. And so able is the discussion involved in our recommendation, that it cannot fail to command the admiration of every enlightened and unprejudiced judge, by whom it may be examined.

The next topic, to which we shall specially invite the attention of the reader, is our author's attempt to prove the identity of caloric and atmospheric electricity. To those dis-

wish it however to be distinctly understood, that by the term "*triumphantly*" we do not mean to express our entire concurrence with the Doctor, in all his opinions. Our design is only to record by it our admiration of the mental ability and heroic spirit displayed by him, in the midst of sacrifices, difficulties, and privations, with which nothing but an instinctive and confident anticipation of success could have induced him so long and laboriously to contend. For it may be reduced to an axiom, that no person *will* so contend, except, as the result of a deliberate examination of his powers and qualifications, he feels in himself a fitness to succeed.—But, in justice to Dr. Metcalfe, as well as to our readers, we must now permit his volumes to speak for themselves. And this we shall do, by first stating the point or points which the Doctor proposes to prove, and then giving, in his own words, his matter of proof.

He commences his work by an interesting representation of the views of certain distinguished philosophers of antiquity, respecting the nature of *elementary fire*, which was no doubt identical with our *modern caloric*. He alleges that, as evidenced by the terms employed by them, in expressing their conceptions of it, they regarded it as a substance of an etherial and highly sublimated and refined, if not of an actually *spiritual nature*. Of course they must have attributed to it great power and efficiency of action. But he does not tell us precisely what this action was.

His next step is an attempt to prove, in opposition to the hypothesis of Lord Bacon, Sir H. Davy, Count Rumford, and others, that caloric, instead of consisting in *mere motion*, is a distinct substantive form of imponderable matter, possessing, as already stated, powers of action next in order and standing to Omnipotence itself. In his attempt to establish the *materiality* of caloric, and its independence of every other kind of matter, we think him as successful as *facts* can render him. A summary of his leading arguments is as follows:

"1. That it may be added to and subtracted from other bodies, and measured with mathematical precision, as all good thermometers demonstrate:—

"2. That it augments the volume of bodies, which are again reduced in size by its abstraction:—

"3. That it modifies the forms, properties, and conditions of all other bodies, in an endless variety of ways:—

"4. That it passes by radiation through the most perfect vacuum that can be formed by means of the air pump, in which it produces the same effects on the thermometer as in atmosphere:—

"5. That it exerts mechanical and chemical forces which nothing can restrain, as in volcanos, the explosion of gunpowder and other fulminating compounds:—

"6. That it operates in a sensible manner on the nervous system, producing intense pain, and disorganization of the tissues when in excess.

"But if caloric were a mere property or quality, how could it be taken from one body and added to another? Or if it augment the volume of other bodies, must it not itself have volume, occupy space, and therefore be a material agent? Would it not be mere jargon to speak of the radiation, reflexion, convection, and conduction of a mere quality, or immaterial property? And if caloric were only the effect of vibratory motion among the particles of ponderable matter, how could it radiate from hot bodies without the simultaneous transition of the vibrating particles? But it is certain that when iron, copper, and other metals are heated to any temperature below the point of ignition; like boiling water, they give off caloric freely, without any sensible loss of ponderable matter."

Another extract containing a breviat of Dr. Metcalfe's views of the power and general agency of caloric in the material universe, we recommend to the reader, as worthy of all the attention and reflection he can bestow on it. And, if he be not prepared or inclined to comply with our recommendation, our next advice to him is, not to read it at all. A *common-place* perusal of it will be useless.

"Having thus proved that caloric is a material agent, I now proceed to show that it is a self-active principle, capable of moving itself, and of generating motion in all other

bodies. The cardinal facts which connect its agency with the general theory of physics, may be reduced to the follow-in propositions:

"1. That the activity or moving power of all bodies, is directly in proportion to the amount of caloric around their particles:—

"2. That all molecular motions, whether centrifugal or centripetal, may be resolved into the law by which caloric repels its own particles, and attracts those of ponderable matter, with forces that vary inversely as the squares of the distance:—

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"7. That the directive power of the compass needle diminishes from the isothermal equator to the points of lowest mean temperature, which are the magnetic poles; and that all its variations correspond with the variations of terrestrial temperature:—

"8. That caloric is the active principle in light, whether radiated from the sun, or generated by ordinary combustion, friction, percussion, phosphorescence, or the electric discharge.

"That caloric is a self-active principle, might naturally be inferred from the fact, that every change in the temperature of bodies is attended with motion among their particles. It has also the power of moving from one place to another, and even through the vacuum of an air pump, without any projectile impulse from the particles of ponderable matter; as when it radiates from hot bodies. And that it has the faculty of generating motion among the particles of other matter, would appear from all the phenomena of nature with which we are best acquainted.

"For example, under the ordinary pressure of the atmosphere, and at, or a little below the temperature of 32°, the particles of water exist in the solid and apparently fixed state. But if 140° of caloric be added, their mobility is so far increased that they glide freely over one another, and assume the fluid form. If more be added, their activity is still further augmented by every degree of temperature, up to the boiling point, when the whole is found to be in a state of rapid intestine motion. And if at this stage of the experiment, the water be kept over a furnace, until it has received about 1000° more of caloric, the boiling liquid is converted into steam, the moving force of which is exalted by every addition of this active principle, which has the power of converting all other bodies from solids into liquids, vapors, gases, and flame, or luminous incandescent particles."

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The next topic, to which we shall specially invite the attention of the reader, is our author's attempt to prove the identity of caloric and atmospheric electricity. To the discussion of that point he has devoted an entire chapter (the *first* of his *third* book) and it is among the most able and interesting that his work contains. Still however is it here and there dotted with a few obscure spots (*rari nantes in gurgite vasto*) which, though *analogy* may sustain them, require a stronger and clearer light, united to the *direct* influence of additional *facts*, to identify them completely with truth and science.

It would be exceedingly gratifying to us to present to our readers an epitome of this chapter, were the end attainable. But it is not; because the chapter is itself an epitome of a large mass of matter, which cannot, as it appears to us, by either compression or abstraction, be any further condensed.

To communicate to our readers therefore some knowledge of the character of the chapter, the most suitable expedient we can adopt will be, to lay before them a few extracts bearing more or less directly on its leading purport—to show the *simplicity* at least, if not the *unity* of the source of action, in the seeming *multiplicity* and *complexity* of the economy of nature. The following extract will illustrate our meaning:

"The more profoundly we scrutinize her operations, the more we discover of simplicity and unity of power amidst all her diversified movements and transformations. Who could have suspected without a general survey of the widely extended provinces of nature, that the aggregation of liquids into spherical drops, and their adhesion to solids, are resolvable into the same power that determines the solidity of and rotundity of the earth?—which causes rain to descend from on high, rivers to flow towards the sea, and planets to revolve around the sun?—yet these various movements were traced by Newton to one and the same law.

"What can be more unlike to the mass of mankind, than the opposite forces of attraction and repulsion, contraction and expansion? Yet I have proved that they are both produced by one and the same agent; which in certain proportions binds the atoms of ponderable matter together, as in cohesion and chemical union; while in other proportions it diminishes or destroys their cohesion, as in liquefaction, vaporization, combustion, &c., by which the forms, properties, and powers of all bodies are perpetually changed."

* * * * * * *

"If, then, caloric be a universal principle of action in nature, and immediately connected with all the phenomena of motion, what is electricity? Is it a distinct fluid, *sui generis?* or is it a modification of the igneous principle? These questions, so intimately connected with the whole theory of physics, have never yet been satisfactorily answered. If electricity were the generic moving power of nature, it ought to be

every where present. But so far is this from being the fact, that it is only under peculiar circumstances that it is developed so as to be appreciable by the senses; whereas, it is impossible to realize the absence of heat, which is indispensable to all the phenomena of climate, season, the growth of vegetation, and the life of nature."

In the course of his remarks on the subject, our author shows (what nobody indeed denies or doubts) that caloric is the immediate cause of evaporation; because, other things being alike, in proportion to the amount of *sensible caloric* (constituting *temperature*) in any place, is the amount of vapor produced—that wherever there is *evaporation*, *there* is also *electricity;* and, other things being equal, the quantity of the latter is in direct proportion to that of the former.

As clouds are the product of evaporation, and contain a large amount of latent caloric, the lightning which bursts from them is nothing but a stream or ball of condensed caloric in rapid motion.

In tropical climates there is more caloric, evaporation, and rain, than in temperate ones; and proportionally more of lightning and thunder.

In temperate climates caloric (temperature) evaporation, and lightning superabound alike in summer, and decline alike in autumn and winter. And, in polar climates, they are proportionately wanting throughout the year.

Caloric and lightning are identical in their action in melting metals, setting fire to combustibles, and producing flame.

During thunder-storms an abundant discharge of lightning is known to be, as a *general* if not an *unfailing* occurrence, followed by an abundant precipitation of rain. The cause is obvious. The lightning is a modification of the caloric which suspended the water of the cloud in a state of vapor; and, the suspending agent being suddenly discharged, in the form of lightning, the vapor it had produced and upheld is immediately condensed into water, and descends to the earth, in the form of rain. Our author's views on these points we shall submit to our readers in his own words.

"The cardinal facts which connect the phenomena of lightning with the theory of rain, may be reduced to the following propositions:

"1. In the torrid zone, where evaporation and rain are most copious, the amount of lightning is greatest. There is also far more during summer than winter in the middle latitudes, and scarcely any in the polar regions.

"2. In those parts of the world where there is no rain, there is no lightning, as at Lima in Peru; nor is there any in Egypt, Palestine, and other parts of the world during the prevalence of dry weather. It therefore follows,

"3. That where there is no condensation of aqueous vapor, there is no lightning.

"The most superficial observers of nature have been impressed with the immediate connexion between lightning, intense heat, and rapid precipitations of rain. By a careful analysis of the phenomena it becomes self-evident, that if caloric be the true and only cause of evaporation, its condensation and precipitation can be effected only by the evolution of the same agent.. During winter, the quantity and elastic force of vapor in the atmosphere are comparatively low in the middle latitudes, where it is condensed gradually on meeting with colder air. During spring, evaporation augments with increase of temperature, when masses of warm and cold air often meet, causing frequent showers of rain, and sometimes hail; still without much thunder and lightning. But during summer, when the temperature becomes tropical, and the atmosphere saturated with highly elastic vapor, we have tremendous explosions of thunder and lightning, with rapid precipitations of rain and hail. Corresponding with the temperature of the torrid zone, and the amount of evaporation, thunder storms occur almost daily during the rainy season, on the coasts of India and S. America."

We shall here extract a passage to show the accuracy and ability of Dr. Metcalfe, as a logician, no less than his soundness and depth as a philosopher. For, though he never deals in the technicalities of syllogism, there runs through his writings a closeness and strength of reason and argument, but rarely found in physical productions. His logic, when he resorts to it, is as solid and impenetrable, as that of Crawford in his celebrated treatise on the subject of phlogiston—or as

that of the well-known logical treatise of Blane, the precise title of which we do not, at this moment, remember.

The passage we are about to quote contains Sir John Herschel's celebrated and well-founded rules for detecting the *common cause* of a large mass of unclassified facts, and our author's matter of proof that he has conformed to them, in his inquiry into the identity of electricity and caloric. The rules are as follows:

"1. Invariable connexion of the cause and effect, unless prevented by some counteracting cause.

"2. Invariable negation of the effect, with absence of the cause, unless some other cause be capable of producing the same effect.

"3. Increase or diminution of the effect, with the increased or diminished intensity of the cause in cases which admit of increase and diminution.

"4. Proportionality of the effect to its cause in all cases of *direct unimpeded* action.

"5. Reversal of the effect with that of the cause. He adds, that we are not to deny the existence of a cause in favor of which we have a unanimous agreement of strong analogies, though it may not be apparent how such a cause produces the effect.

"The above general rules apply with great force to the connexion between temperature and the phenomena of lightning.

"1. It has been shewn, in accordance with the first rule, that a certain range of solar *temperature* is indispensable to the existence of *lightning*, which are therefore invariably connected together as antecedent and consequence, or cause and effect.

"2. It has also been shewn, in conformity with the second rule, that in the absence of condensation and precipitation of vapor there is no lightning:

"3. That other things being equal, the amount of evaporation, condensation, and lightning, are increased and diminished with the augmentation and decrease of temperature.

"4. That the quantity and splendor of this wonderful meteor are proportional to the accumulation and intensity of solar heat, from the equator to the poles—and

"5. That the effect is *reversed* on passing from the regions

of perpetual cold to the torrid zone, and from winter to summer.

"In reference to the 3d and 4th rules it may be observed, that the quantity of precipitation and lightning are greatly diminished, *cæteris paribus*, by *uniformity of temperature*, as in the tropical portions of the sea far from land, and other parts of the world where the winds blow long in one direction; whereas changes of temperature are indispensable to the condensation of atmospheric vapor, and to the evolution of its caloric in the concentrated form of lightning."

We shall here mention, as an insulated fact, that our author often embodies in his foot-notes some of the most curious and interesting statements, and valuable expositions that are contained in his work. As a brief specimen of them we extract the following, which, by a simple analysis, whose subject is more or less familiar to every one, demonstrates the vast agency which caloric holds, and the stupendous power it exerts in the economy of our globe.

"It has been estimated by geographers, that about thirty-three cubic miles of water are discharged daily into the sea by all the rivers of the earth. So that if this calculation be correct, or even an approximation to the truth; and if the same proportion of rain falls into the sea as on a given area of dry land, it follows that nearly 140 cubic miles of water must be carried into the atmosphere every twenty-four hours, and again precipitated in the form of rain and snow. Such are the vast forces which caloric is continually exerting in the phenomena of meteorology, without any reference to those violent commotions of the atmosphere termed hurricanes, tornadoes, and other less impetuous winds. Nor is it unworthy of passing notice; that as the quantity of water diffused through the atmosphere is in proportion to the heating power of the sun, the barometer stands higher, on an average, within the tropics than in the middle or polar latitudes; as proved by the observations of Erman, laid before the French Academy of Sciences,—after my chapter on the barometer had been printed. More water is also converted into steam during the heat of the day, and more steam is condensed into water during the coldness of night, which is the most convenient period for rain, as it does not then impede the labors of husbandry."

The only other portion of Dr. Metcalfe's volumes which we can notice at present, is that in which he treats of the "*Influence of climate and season on the physical, intellectual and moral character of the human race, as shown by the difference of stature, magnitude of the chest, configuration of the brain, complexion, &c., among the various nations of the earth;*" constituting one of the most interesting, instructive and practically important sections of his work. And though we do not concur with him, in every element of the doctrine he maintains on the subject, yet does truth compel us to say, that he has handled it with more ability, than any other author whose writings we have perused. Unquestionably he has collected and embodied in it a greater amount of appropriate and illustrative matter, than we have ever previously witnessed within so limited a compass. And he has ascribed the whole scheme of operation which his remarks embrace, directly or indirectly, to the agency of caloric. That substance is, in his opinion, second only to OMNIPOTENCE itself, in the creation of hot, temperate, and cold climates—and in supplying them respectively with fertilizing rains, bringing down on them blighting frost and snow, or in parching them with drought and entailing on them sterility. Caloric is also, if not the immediate, at least the remote agent in the formation, *geologically*, as well as *meteorologically*, of the difference between a productive and a sterile soil. It is likewise chiefly instrumental in the prodcution of the diversified localities of mountain, hill, plain, and valley. Climate, locality, and soil create and maintain the immense varieties of the animal and vegetable tribes that people the earth. And they again contribute in no small degree to the differences in the aspect, and constitution, condition and general character of MAN. And HE, by his powers and long continued industry in agriculture and other pursuits, changes materially some of the leading elements of *climate itself*, and of course its influence on living matter of every description—*himself* not excepted. The climate of the West and South of Europe is by no means what it was ten centuries ago,

when it was overshadowed by forests, and covered only by the *native* productions of its uncultivated soil. We are taught to believe by records, whose correctness we have no reason to queston, that the climates of Italy, Germany, and Great Britain are far different now, from what they were at the commencement of the christian era. So, as we are assured, is the climate of Palestine and of the regions adjacent to it. And, though we have no historical records positively to instruct us respecting it, yet, for a man of intelligence who has reflected on the subject, to believe that the climate of China is not changed in two or three thousand years, by the various *influences* of near half a million of millions of resident human beings, and those of their concomitances and appurtenances, is absolutely impossible. Even, in the United States, the climate has undergone no very slight change, since the country was first visited by the Cavaliers and the Pilgrims. Nor is it easy to believe, that in the days of its power and glory, both intellectual and corporeal, even the land of the Nile and the Pharoahs experienced the same arid, adust, and sand-storm atmosphere and its concomitants that inflict on it the numerous evils of climate which it suffers at present. And all those mutations, whether for better or worse, our author, we repeat, imputes to corresponding mutations in the agencies of caloric. Some of the statistical results of climate, which he specifies, are memorable and momentous. His purpose in them is to prove the life-giving and life-sustaining agency of caloric. The following extract contains some of the principal facts which he adduces—and they are exceedingly significant, and favorable to some of the principles of his theory.

"But as all animals are nourished by plants, or by animals that have lived on plants, it is clear that the capacity of any country to support a numerous and wealthy population, must depend chiefly on climate. For example, throughout the whole of Asia and North America, above latitude 50°, the mean annual temperature is below 52°, and the growth of vegetation is arrested for ten or eleven months in the year,

while in the coldest places (which are the foci of magnetic power), it falls 60° and 70° below 0° during winter. The consequence of which is, that in the vast regions of Siberia, embracing an area of 4,010 000 square miles, the number of inhabitants does not exceed 3,600,000 who, from the nature of the climate, are compelled to obtain a miserable subsistence by fishing and hunting.

"In the still more desolate regions of British and Russian America, on a territory of 3,650,000 square miles, the native population does not exceed 200,000, who live mostly in snow huts, clothed with skins, and nourished by animals, obtained chiefly from the sea. Without agriculture, commerce, manufactures, or the possibility of uniting together under regular forms of government, they are reduced to a state of complete barbarism; and, like the scattered tribes of northern Asia, are mere dwarfs in stature as in mind.

"And if we pass to the elevated plains of ancient Scythia, in central Asia, where the climate is colder than any part of the northern hemisphere in the same latitudes, where bleak northerly winds prevail for eight or nine months in the year, the growth of vegetation is always imperfect; and according to Balbi, on a territory of 4,250,000 square miles, the number of inhabitants does not exceed 30,000,000, who for the most part lead a wandering or nomadic life, and have never made any considerable progress in civilization, science, literature, and the arts, if we except the brutal art of war; so that if we include the whole of North America above latitude, 50°, and of Asia above 40°, the population is only about 33,800,000, on a territory of nearly 12,000,000 square miles.

"But in the warm and temperate latitudes of Asia, south of latitude 40°, where the growth of vegetation continues from six months, as in the north of China, to ten months, and even the whole year, in the southern portions of the continent, the population is about 400,000,000, on a territory of 6,450,000 square miles. In India, it is 140 000,000 on an area of 1,200,000 square miles; while in China alone, between latitude 20° and 40°, it is about 200 000,000, making an aggregate of 340,000,000 on a territory of 2,840,000 square miles. From which it may be shown by calculation that if the climate of northern Asia and America were equally favorable, they might support a population of more than 1,400,000 000 on a territory of 12,000 000 square miles; whereas it is only 33,800 000. And what is their rank in the scale of intellectual and moral enjoyment?

"If we pass to the warm and temperate latitudes of Europe, where the growth of vegetation continues from six to ten months in the year, and the inhabitants are seldom pinched with extreme cold, or exhausted by excessive heat, the population is about 170,000,000, on a territory of 1,425,000 square miles. In the United States, the climate and soil of which are equally genial and fruitful, there is a territory of 2,300,000 square miles, with a population of 17,000,000; which, should it go on doubling every thirty-six years, will be 150,000,000 in another century. And if the period of doubling be then fifty years, it will be 600,000,000 in another century. Nor can there be a reasonable doubt, that improvements in science, agriculture, the arts, and the adoption of a chiefly vegetable diet, will afford the means of supporting in comfort a much greater population to the square mile, than has ever yet existed in any part of the world. And should the colonies of Great Britain, now pouring into many of the best portions of the earth, continue to multiply as at present, the language, civilization, intelligence, wealth, and growing prosperity of the Anglo-Saxons must ultimately prevail in every quarter of the habitable globe."

That all other things being alike, the temperature of a warm or even of a *hot* climate is most favorable to the production and multiplication of every form of *living organized matter*, man himself included, is perhaps true. But that it is most favorable to the highest and most efficient development and constitution of man, is not true. To that a more temperate climate is better adapted. We are inclined to believe that the salubrious places, insular and continental, in and around the Mediterranean, especially Greece and Italy—to which may be added, in other latitudes, Ireland and England, have been more productive of human greatness, than any other parts of Europe. Our reference is to the frequent production of a high order of both mind and body—but peculiarly of the latter. But we *know* them to be equalled, and we believe *surpassed* in their fruitfulness, in that respect, by a large tract of the United States. We allude to the entire hill and mountain region throughout the Union, but more particularly in Virginia and North Carolina. We have long

believed, and often asserted, that, be the immediate cause what it may, the finest specimen of the human race, *as a community*, we have ever visited, is found in the hill and mountain counties of *central* Virginia. We have also seen some rare samples of the excellence of all the higher qualities of man among the inhabitants of the hills and steeps of Vermont—though the winter climate of that region is very severe, and the summer heat, for a time, exceedingly intense.

It is not therefore so much the occasional *extremity* of the temperature of climate, as it is its *long continuance* that prevents, in the human system, that perfection which it might otherwise attain. So resilient and recuperative is the constitution of man, that, though somewhat unstrung and debilitated in this country, by the burning heats of June, July, and August, it regains its tone and strength, under the congenial and friendly temperature of the other nine months. Hence, notwithstanding the high and relaxing temperature of our summer atmosphere, man attains to as much perfection, in the United States, as in any other portion of the globe. And though Americans themselves have *sometimes doubted*, and the people of certain European countries positively *denied* this truth, facts have already occurred and are still daily accumulating, which will not fail to convince them in common of the palpableness of their mistake, and completely vindicate the reputation of the United States from the groundless and disparaging charge of being the birth-place of any sort or degree of human inferiority.

Another bold and startling opinion of Dr. Metcalfe is, that light is not an independent form of imponderable matter, and does not radiate in that character from the sun. But, that it is the product of various sorts—indeed of all sorts of ponderable matter *dissolved in caloric*, or at least thrown by that agent into a state of flame or incandescence. Yet, extraordinary and improbable as, on first thought, that opinion will be generally held, it is strongly supported by multitudes of facts. Of these facts one class is, that, when in a

state of combustion, different substances produce light of different colors—white, blue, red, green, yellow, and violet, as may be easily demonstrated by well-known experiments.—Nor can a doubt be entertained, that each color depends on some peculiarity in the combustible which emits it. Nearly the whole of many sorts of matter moreover, when consumed by combustion, is dissipated in the form of light. The light of flame is nothing but combustible and, of course, ponderable matter, volatilized and powerfully acted on by caloric. But, that our author's opinion may be fairly judged of, we shall, in justice to him, adduce his reasons for it, in his own words.

"That every description of ponderable matter is actually convertible into light by a sufficiently intense heat, or by electricity, will appear from the following undeniable facts:

"1. That the quantity of light generated by ordinary combustion, friction, or percussion, is always in proportion to the rapidity with which ponderable matter is ignited and volatilized.

"2. That the color of light thus produced always depends on the species of matter employed.

"3. That the electric spark (like that produced by the collision of flint and steel) consists of exceedingly minute portions of ponderable matter in a state of incandescence, as will be shown hereafter by the decisive and beautiful experiments of Fusinieri.

"4. That when the electric fluid is transmitted through the vacuum of an air pump, little or no light is produced, as proved by the experiments of De Luc, and afterwards by those of Sir H. Davy.

"5. That the most intense heat of a voltaic battery never produces any light, except when acting on ponderable matter; consequently, that light and heat are not identical, as maintained by some modern theorists; and that neither of them is generated by the mere vibrations of an æthereal medium."

The following portion of one of our author's foot-notes, we deem too interesting and important to be omitted in our reference to this topic.

"That caloric is a constituent of light, (as it is of all other bodies.) and is the active principle in its generation, is evident from the fact, that the most refractory gems and metals are transformed into luminous incandescent particles by a sufficiently intense heat, definite measures of which are required to produce the effect on different species of matter. It has also been proved by the experiments of Hulme, Dessaignes, Macartney, and others, that every species of phosphorescence is promoted (for a time) by moderate heat, and always extinguished by the coldness of freezing mixtures; while others have found that the light of luminiferous insects is much greater in vessels of oxygen gas than in common air. But that caloric is a distinct essence, and may exist independent of light, is manifest from the fact, that it converts solids into liquids, vapors, and gases, in the midst of perfect darkness; while it radiates from the earth during night, as it does from boiling liquids and other hot bodies, without being attended with any light."

In confirmation of part of this note, we shall add, that we have repeatedly read common sized and even small print, at night, by the light of half a dozen of large West India fireflies, placed in a vial filled with oxygen gas. When placed in a vial filled with atmospheric air, those insects are much less luminous—though still much more luminous than the common fire-fly of the United States.

But although we have hardly yet commenced what can be correctly called a review of Dr. Metcalfe's volumes, we must notwithstanding hasten to bring our article to a close. To prepare, *in any compass* of letter-press, a competent review of such a work, is a task second in difficuly only to that of composing the work itself. And to perform such a task, in the compass of twenty, thirty, or forty pages, would be even more difficult, in some respects, than the composition of the original production. The reason is plain. To review satisfactorily is to judge and analyze severely the published thoughts and purposes of the author whose writings are reviewed, and to draw from them and commit to paper, in a generalized and compressed, but perfectly lucid and intelligible form, the characteristic substance of the matter they in-

volve. And no one who has had the least experience in it can be ignorant that the process of generalization and compression of intellectual matter is far the most arduous labor a writer can encounter. A fitness for its performance requires at once a degree of concentrativeness and a power of analysis, which few minds possess.

As our author's volumes however cover two branches, distinct from each other—the *phenomena* and *operations* of caloric in the department of *inorganic* and *dead*—and the same in that of *organized* and *living* matter, we at first indulged the hope of being able to finish, in the present article, all we might hold it requisite to say respecting the former branch. And, should it be deemed expedient to introduce the subject again to the readers of this Journal, it was our design, in that case, in a subsequent article, to treat exclusively of the latter branch, which occupies the fourth, fifth, and sixth books, constituting more than half of the work before us, and will be generally regarded as the most interesting and important portion of it.

We regret, however, to find ourselves entirely disappointed in our hopes respecting the branch of our subject, which relates to the agency of caloric in the operations of inorganic matter. So spacious is that field, and so abundant and diversified the matter it contains, and the phenomena it exhibits, that we have been able to traverse and examine, in this article, but a moderate portion of it. That section of it moreover which is characterized by the most sublime displays of power and grandeur is nearly untouched by us. We allude to the magnificent representation which our author has given of the agency of caloric, in the production of earth-quakes and volcanic eruptions, with their concomitants and consequences, the upheaving or depression of large portions of continents, the creation and destruction of islands and mountains, and in its operations as the immediate source of the centripetal and centrifugal forces, to which we are indebted for the glorious pageant of the play in their orbits of not only the planets and satellites of the solar system, but of the

entire host of heavenly bodies, through the whole scope of material creation. And superlatively extravagant or altogether groundless as that theory may perhaps be deemed by persons who have never studied, and therefore do not understand it (*ignorance* being *ten times* the cause of opposition to new doctrines where *knowledge* is *once*) Dr. Metcalfe has treated it so ably and brought to bear on it so many illustrative facts and analogies, as to render it not only worthy of the attention of enlightened philosophical inquirers, but a source of no ordinary degree of pleasure and instruction to them.

Not only does the perusal of the pages of our author's work, in which it is expounded, communicate knowledge itself; by the agreeable and peculiar exercise it affords, it excites, expands, and strengthens the mind, and throws it into a state of higher and more effective preparation for the reception of knowledge from other quarters.

We regret however the less, not having been able to give, in this article, a more comprehensive view of Dr. Metcalfe's work, as we are gratified to learn, and to be authorized to announce to the public, that an edition of it will be issued in a short time from the American press. And we hope the edition will be a large one, and would even counsel to that effect, that the countrymen of the author may be permitted to manifest, on an extensive scale, by an extensive purchase of it, their anxiety to peruse it, and the high estimation in which they hold it, in anticipation, *as an American production.* And we venture confidently to promise them, that no sooner shall they have made themselves familiar with its contents, than its *mere Americanism* will be thrown into shade, by its other higher and more valuable qualities.

One of the peculiar characteristics of our author, as a writer, is his never-ending solicitude to detect and comprehend the *causes* of things. The oft-quoted line of the poet,

"*Felix qui potuit rerum cognoscere causes,*"

seems never for a moment to escape from his memory. And

by that recollection, and his constant endeavor to realize it in himself, he proves that he is actuated by the true spirit of philosophy. For so far as an inquirer applies himself to an investigation of causes and their connexion with effects, he acts, whether successfully or not, the part of a philosopher. And, in the work we are examining, Dr. Metcalfe has pursued that practice to an extent, to which we do not, at this moment, remember a parallel. So true is this, that he seems to have adopted, as a rule of self-government, never to incur the charge preferred by Lord Bacon against the philosophers of his time, and those who had preceded him, that, in their investigations, the most important facts connected with the fundamental constitution of nature had been overlooked by them; such as the "*cause of heat and light, weight and density, hardness and softness, solidity and fluidity, fomentation and putrefaction, germination and organization.*"

These are indeed facts and considerations of the utmost importance in the fundamental constitution of nature, with the causes of which philosophers should at least very strenuously endeavor to attain an acquaintance. And if they fail thus to 'endeavor,' they are so far wanting in the attributes of their calling, and incur the forfeiture of a corresponding portion of the proud title to which they aspire.

Very few persons however bestow on these matters the consideration they deserve. Almost every one regards them as trivial, common-place points unworthy of attention. Yet is the cause of the heat and light of a burning candle as full of interest, as much an instructive element of philosophy, as is the cause of the heat and light which emanate from the sun. Nor is a knowledge of the causes of weight, hardness, and softness less important than a knowledge of the causes of the descent of ponderous matter, or of the centripetal and centrifugal forces which regulate the movements of the heavenly bodies. Indeed it might be easily shown to be, to a certain extent, more important, because more immediately connected with ourselves, and applicable to the common practical purposes

of life. Yet is the latter knowledge highly esteemed and eagerly sought after, while the former is comparatively despised and neglected. So true is it that we seldom fail to concede to things rare and foreign an ill-judged and groundless preference to things common and domestic.

Very different, however, is the practice of Dr. Metcalfe. He sets a high estimate on the knowledge of *every cause*, and aims at the attainment of it; because it makes a part of the machinery of creation.

Finally; if the Doctor succéed in establishing the correctness of his theory of caloric, (and we do not oracularly assert that he will not) he will be one of the most illustrious benefactors of physical science (if not *himself the most illustrious*) that time has produced. His success, should he achieve it, will be the solution of the *gordian knot*, to effect which many of the master geniuses of every enlightened era and country have labored in vain. And whether he succeed completely or not, he will notwithstanding, by virtue of what he has already done, occupy a place among the most eminent writers of the age.

C. C.

Erratum.—For *fo*mentation, read *fer*mentation, page 48, end of first paragraph.

ART. IV.—*New Elements of Operative Surgery.* By ALF. A. L. M. VELPEAU, Professor of Surgical Clinique of the Faculty of Medicine of Paris, Surgeon to the Hospital of La Charité, Member of the Royal Academy of Medicine, of the Institute, &c. Carefully revised, entirely remodelled, and augmented with *a Treatise on Minor Surgery.* Illustrated by over 300 engravings, incorporated with the text: accompanied with an *Atlas in quarto of twenty-two Plates*, representing the principal Operative Processes, Surgical Instruments, &c. First American, from the last Paris edition. Translated by P. S. TOWNSEND, M.D., late Physician to the Seamen's Retreat, Staten Island, New York. Augmented by the addition of *several hundred pages of entirely new matter*, comprising all the latest Improvements and Discoveries in Surgery, in America and Europe, up to the present time. Under the supervision of, and with Notes and Observations by VALENTINE MOTT, M.D., Professor of the Operations of Surgery with Surgical and Pathological Anatomy, in the University of New York; Foreign Associate of the Académie Royale de Médecine of Paris, of that of Berlin, Brussels, Athens. &c. In three volumes.—Vol. I, pp. 914: 1845. Vol. II, pp. 1092: 1846. New York: 8vo. J. & H. Langley.

Notwithstanding that this book has some rare claims on our attention, we had thought, owing to the late period at which the first volume reached us, to defer a notice of it until the whole should be issued. Having seen the second volume, however, and believing, as we do, that the translator and editor will kill the book off, will effectually damn it, in their intemperate zeal to give it currency, we have determined to come to the rescue and save it if we can. We are perfectly serious, of course.

We say it has rare claims to notice. It has passed through two or three editions in the original language. The author is one of the most remarkable men in the profession, and one of the most renowned. He is known to all tribes, kindreds, and tongues, by the many who have heard his voice in the lecture room, by the thousands who have been instructed by his pen. Of all his productions, numerous and excellent as they are, this is the one on which he himself seems to lay most stress,

and the one, for aught we know, by which more especially he hopes to trasmit his name to posterity.

We repeat it has unusual claims to notice. It is sponsored by *MM.* Townsend and Mott, the latter of whom claims for himself (and "for his country," of course) the same position in American surgery that Velpeau holds in French. They pre-advised us long since of its preparation, lest it should take us unawares. They invited our attention to it in every possible way. The announcement has met the eye on the covers of medical journals; it has stared us in the face from publisher's catalogues; it has gone forth on the thousand wings of the daily press to every hamlet in the country. Nor did their exertions stop here. They were not satisfied with the *omne-ignotum-pro-magnifico* disposition of the common mind. They spoke, and still speak, of the work in the most magniloquent phrases; they have, in this respect, the most "damnable iteration" imaginable. If we adopt the opinion of the translator and his associate, repeated again and again in the most solemn and impressive manner, the world has never beheld such a "systematised condensation" of facts and experience, a surgical work so "thoroughly complete," so "judiciously classified," so "philosophically planned." A non-professional man, or even a professional novice, would suppose it to be the concentration, the essence, the summary, the epitome, or in the elegant language of the translator, the *abrégé*, of all that has been done, written, and said in and of surgery from the days of good-man Adam down to the present ten o'clock in the morning. He would look upon it as a veritable pocket Bodleian, a surgical Vatican in little. He would suppose no other book to be needed. He would conclude it to be as indispensable to the surgeon as eyes to a blind man, ears to a deaf one, or hands to an armless one. In short, he would be convinced that it not only pictured all the past and present phases of surgery, but adumbrated all the future.

It is evident that, in the opinion of the translator, genius can no further go—it is the *ultima Thule.* If it were an in-

spired work, he could scarce speak of it with more ardor. As there is one Iliad and one Homer, one Æneid and one Virgil, one Paradise Lost and one Milton, so there is one book on operative surgery and one Velpeau. And what Pope is to Homer, Dryden to Virgil, and Delille in France to Milton, so is Townsend to Velpeau.

But the translator has quite as exalted an opinion of surgery as of the book. It is spread over nearly the whole field of his mental retina. With him the part has become the whole, the less includes the greater. As Velpeau's work—that is to say, "this first American edition, as translated, and with notes, by Dr. Mott and myself"—supercedes every thing ever written, or ever to be written; so "is the great and controlling domain of Practical, Operative, and Pathological and Anatomical Surgery now monoplizing almost the entire healing art!" There is annexation for you with a vengeance. "The whole of Oregon, or none!" is the cry of the surgeons. Time was when there was "joint occupancy;" when physic and surgery had respective claims; when their domains as it were passed each other; when there was common ground. *Mais nous avons changé tout cela!* Surgery engulphs the whole, as easily as Aaron's rod swallowed those of the magicians. The surgeons claim the entire territory—"no compromise!"—54° 40′ !" To our translator "it is clear and indisputable" that Medicine is among the things that were—parodying Horace Smith—

"Physic is an idle waste of thought."

There are to be no more physicians—*non nominis umbra!* no obstetricians—no anatomists—no pathologists—it is *Troja fuit* with all these, except in a surgical point of view. Such of us as almost tremble at the name; who would as soon brave the hungry gaze of "a Hyrcan tiger" as the glitter of a polished catlin; who have been treating bilious fevers, agues, pleurisies, dysenteries, and Heaven knows what else, all our lives; who have been giving calomel and clysters, poking suppositories up the rectum and spreading blis-

ters; and who never ventured further into surgery than doctoring claps and chancres—to find ourselves surgeons!—why it is a most rare circumstance! It is a joke that beats Moliere's *Médecin malgré lui* all hollow! It is most wonderful wonderful and yet again wonderful!

This putting a part for the whole, the less for the greater—this Synecdoche, as the Rhetoricians call it—is a favorite figure with our translator. He does not confine it simply to the book. Nor yet is he satisfied with taking surgery to be the entire healing art—the healing art "in its ensemble" as he would phrase it. In his enlarged comprehension he takes his "long-cherished, personal, and honored friend, preceptor and kinsman" (viz: *M.* Mott) to embody the whole of American surgery. Thus it is all in a concatenation accordingly—the consistency is beautiful—the correspondence admirable. The "Elements of Operative Surgery" is the *liber librorum*—

> *Medicine is an idle waste of thought*—
> AND MOTT IS EVERYTHING, AND EVERYTHING IS MOTT!

He is as much fascinated by him as a gaping boy, for the first time in an anatomical museum, would be fascinated by the rampant, six-foot figure of *papier maché* that graces the Medical Institute of this city. He cannot choose but gaze! and while gazing his honored friend grows under his sight as rapidly as Faust's poodle—he "grows long and broad!" "he fills the whole space!"—will the "*casus* make him laugh," when he sees "the kernel of the poodle?" Does the reader think that we exaggerate? Let him read! if he has a pair of lungs like a pearl-diver; but, if he is troubled with asthma, if in common parlance he is *phthisicky*, if he is old with the old man's wrinkles and anhelation, let him get some one to read for him, who will emphasize what we have placed in large capitals.

"But a still higher source of gratification I frankly confess, is that of the conviction, that in my attachment to a

long-cherished, personal, and honored friend, preceptor and kinsman, and one whose eminent skill justly fills so large a space in Surgical history, (Dr. Mott,) I may have been, as I pledged myself I would be, (see Vol. I.) instrumental both for him, and for his country, in rescuing the details of all his great and master operations, and discoveries, and improvements in surgical processes and principles, from that indistinctness into which they were necessarily passing, by his neglect, (culpable it would be, but from his repugnance to self-laudation,) to gather them together as I now have done in these volumes, from the scattered Medical and Surgical periodical and fugitive works, in which they had been briefly registered, successively as they emanated from his great practical mind, or were created into existence by his INCOMPARABLE GENIUS and consummate skill.

"These master operations have been now, as will be seen in Dr. Mott's own special chapter on *Aneurisms*, also that of *Exsections*, &c., completely arranged and revised under his own inspection, in chronological order, so that hereafter there may be an orthodox work, to which reference may constantly be made for the authentic evidence of what he lays claim to as a Surgeon, and which, thus now, for the first time published to the world, in their *ensemble*, and under his sanction, together with his last, and latest opinions on these matters, present, in our view, we must confess, a precious treasure, for the student FOR ALL FUTURE TIME. It will, we feel assured, prove to be a great *organum* in Practical Surgery which the practitioner, as well as student, may never cease to peruse, and to re-peruse, as embracing some of the most important general *axioms* both in the minute manipulations and in the higher order of Surgical operations, and which will long continue to be received from so exalted a source, as among the surest and most practical land marks to guide those who aspire to eminence in this science, in their onward march to success and honor.

"I feel constrained also to add, that the accomplishment of this part of my labor, is one to which considerations of love of country add in my mind no slight degree of value. For young as our country is in history, and filled as its annals are with great names, both in the heroic periods of its settlement, and in its subsequent ages of military renown, national emancipation, and diffusion of the arts, there is in my humble judgment NO NAME THAT ADORNS THOSE ANNALS EITHER IN THE BATTLE FIELD, OR IN THE COUNCILS OF GOVERNMENT, OR IN ITS DI-

PLOMACY, that has added more sterling reputation, and abiding lustre to the intrinsic glory and future fame of America than that of *VALENTINE MOTT*(*!!!*), unaided and unguilded though that name may be by the insignia of office or of power."

How very solemn! We feel as if "the awful shadow of some unseen power" was over and round about us. We feel as *M.* Mott must have felt what time he journeyed in the East, when, after advertising the approach of the great American Surgeon to some minareted city, he passed through its streets thronged with the halt, the lame, and the blind, clamorous for his notice, and heard high above all the devout cry of some bearded and be-turbaned seller of fruit—"*In the name of the Prophet,* FIGS!"

Does the reader think this irony on the part of our translator? So would we, had we not two goodly volumes, with numerous expressions *passim*, all going to show his earnestness as if "he did'nt care who knew it." Does he think it most "admirable fooling?" Well, foolish it is beyond question, as bombastical as foolish, and as fulsome as the most pampered parasite, the most obsequious smell-feast could have made it. If the subject of such extravagant praises do not blush when he reads them, he is more or less than we take him to be. Will the reader have more? Let him read again, bearing in mind our caution.

"For one who in his duties as a christian and a man of science, has done so much personally in the active field of benevolence, and struck out such noble discoveries and new paths to enable us more effectually to alleviate the miseries of our fellow creatures, there will be a balm as we believe, that will rest upon his memory in after time, less dazzling perhaps, but certainly full as enduring, and far more endearing to future generations, than any that the most ardent homage of patriotism could feel inspired with, for the glare of the most brilliant civic or military exploits."

"Excellent! why this is the best fooling after all"—it would

almost "draw three souls out of one weaver." Does a one ask now what this surgical Malvolio has done that he thus has so much greatness *thrust* upon him? or

> "Upon what *meat* doth this our Cæsar feed,
> That he is *grown* so great?"

Why he himself shall tell. He

"Has practised the ligature of the arteria innominata once, of the common iliac once, of the external iliac six times, of the internal iliac once, of the femoral artery forty-nine times, of the right subclavian within the scaleni muscles, once, of the right and left subclavian without the scaleni muscles, three [now four] times, of the primitive carotid, nineteen times, [now twenty,] and of the external carotid, twice. He has amputated [for osteo-sarcoma] the lower jaw nine times, two of which operations were at the temporo-maxillary articulation, and the upper jaw fourteen [sixteen] times. He has twice practised tracheotomy in the case of croup, [and a number of times for the removal of foreign bodies,] four [nine] times, the section of the sterno-mastoid muscle to relieve torticollis, once the extirpation of a thyroid gland that weighed five pounds two ounces, once [several times] the ligature of the thyroid arteries, with the view of causing atrophy of a goitre, once the exsection of the clavicle, several times the operation for empyema, once gastrotomy, one hundred and six times the operation for hydrocele with injection of sulphate of zinc, twice the exsection of the rectum, twice [several times] the extraction of loose bodies in the articulation of the knee-joint, many times the excision of false articulations, and once amputation at the hip-joint, and at the shoulder and the wrist, [four times operated successfully for the false articulations of the thigh by the seton, several times successfully on the tibia and other bones by the same mode, once successfully the restoration of an imperforate vagina to all its functions, in thirteen cases effected the perfect restoration of the functions of the lower jaw after years of permanent immobility, and once performed exsection of a portion of the nose and upper jaw for a large fibrous tumor]."

And all these cuttings—mere butcher's work at best—these mutilations, which, rightly considered, are so many *op-*

probria to the healing art; which, however necessary, are ever repulsive to the mind of him who is engaged in them, if that mind is properly constituted; these are to make this man

> ———"bestride the narrow world
> Like a Colossus, and we petty men
> Walk under his huge legs!"

these are to wrap up "his memory" after he dies, in some sort of phosphorescent "balm" (unknown, we apprehend, to the Pharaohs) until it

> ———"like a star,
> Beacons from the abode where the Eternal are,"

and flings a glory over his native country;—these, in short, are to make the LAND OF WASHINGTON known as the LAND OF MOTT!! Can folly go further? Would any man wish his worst enemy thus to stultify himself?

It is almost time for us to redeem the promise we made in the beginning, to save this book from its friends. But we cannot yet consent to leave our translator's preface—we should say prefaces, for, counting those in both volumes, there are three of them. They are in many things unique. They belong to a species altogether peculiar; they are indigenous to the region where we find them; and, for the sake of good taste, we trust they will never be naturalized elsewhere. We have not yet exhibited half of the beauties they contain. In variety of a certain kind, they cannot, whether taken individually or collectively, be equalled by anything we know of, not even Sheridan's speech on the Hastings' trial. We do not mean variety of style, for that is ever the same monotonous, involved, cumbrous, heavy-dragoon sort of thing; nor of eloquence, for we have quoted the most famous passages of that; nor of learning, there being scarcely that amount which is considered dangerous; nor of logic, for there is even less of that than of learning. We mean a va-

riety in this wise—that one paragraph is apologetic, another explanatory; one laudatory, another condemnatory; one gratulatory, another monitory; one metaphysical, another metaphorical; one philosophical, another auto-biographical; whilst divers are self-abnegatory; and most are proud, vain, and fantastical. And these are "necessarily and naturally at times" all commingled and intermixed, like colors on a cloth where a painter wipes his brushes.

Shall we give a few more specimens? Here is one that might be termed analytico-laudatory. It shows not only nice discrimination on the part of the writer, but also great grammatical accuracy, upon which he plumes himself.

"The peculiar fitness which the author possesses for such an undertaking, is seen in the sound and well-disciplined mind with which he is gifted by nature—his ample education—his great professional ability and distinction as a practical operator and teacher of surgery—his practised pen as a man of extensive literary acquirements, together with his habits of untiring industry, patient research, and lastly, what is perhaps fully as important as all the rest, the clear judgment, the dignified impartiality, amenity of temper, and spirit of thorough philosophical investigation which he brings to every disputed or difficult question, or point, which is presented to his notice."

Why this is one of Shakspeare's men, anatomized in true Shakspearian style. What "a combination!" Are not the elements rarely mixed in him? Sits he not amongst us like a descended God? "Note him, good Charmian, 'tis the man; but note him!"

The first sentence of the next paragraph we do not know how to characterize, unless we call it philosophical. It strikes us that we have met with it before.

"The fruits of these rare intellectual and moral endowments, which are perhaps infinitely more desirable, certainly in general far more serviceable in society, than the irregular sallies and random efforts and effusions of mere isolated genius, are encountered upon every page of his work."

The careless reader may see nothing of particular moment in this little sentence. But to our thinking it contains the germ of a deep philosophy. Its half axiomatic structure gives point to a great truth it contains—a truth happily exemplified "upon every page" of these prefaces, which essentially consist of "the irregular sallies and random efforts and effusions of isolated genius."

The following sentence should be read as it stands in the book, in immediate connection with the one just quoted.

"As for example, whatever others may say to the contrary, the exact and full description which he gives in all the first portion of this volume in relation to MINOR SURGERY, or those common and indispensable operations, manipulations, dressings, &c., of a general though not difficult nature, which it is nevertheless important to be thoroughly conversant with as the rudiments of our art, and the only sure basis of all correct knowledge to be attained afterwards."

What we observe in this, besides the writer's usual grammatical accuracy, is his remarkable sagacity in nosing out the most important *fruit* of his author's rare intellectual endowments. From the prominence which he gives it, it is evident that he almost considers the treatise on Minor Surgery to be the crowning glory of "Velpeau's *great* elementary work."

"The professional reader also, whoever he may be, if imbued with the proper zeal and enthusiasm which should belong to him, will have reason to thank Professor Velpeau for the mass of valuable erudition which he has brought to bear by his unconquerable application and assiduity, upon the *true* history of every operative surgical process, principle, or discovery, which adorn or can illustrate the annals of the science, fortified as the whole also is by direct and specific references to every name, authority, or work, ancient or modern, upon which the proofs of his assertions and citations rest."

We have quoted this paragraph partly because it contains

violations of syntax for which the writer would have been (and doubtless was) whipped when he was ten years old; and partly because the one we now give is dependent on it.

"We consider that this vein of rich, and much of it new historical contributions in surgery, and which so steadily courses or threads its way through the pages of the work, constitutes as it were the natural woof upon which the whole superstructure is woven, and thus forms to it a substratum of inappreciable value. Because it not only shows what has been done, and what has stood and still stands the test of time, and will doubtless continue to be approved of and recognised as of established utility; but it points out also as dangerous, if not forbidden paths to future explorers, those fruitless speculations and experiments that are to be avoided as not only a destructive waste of time to the student, but as exposing his mind to be seduced by visionary pursuits, and thereby into researches which will be liable to end in the repetition of similar abortive results."

This paragraph is only one of the many gems scattered through these prefaces, as diamonds are scattered in Golconda's mines. As a whole, it is tripartite in character, being metaphorical, scientific, and cautionary. Then the first sentence is likewise tripartite, being composed of three—nearly four—distinct metaphors, any one of which would suffice to make the fortune of an unknown writer. First, there is a "vein" filled with "new historical contributions"—a fluid which, though "quite a peculiar sort of juice" as Mephistopheles says of the blood, we agree with the writer in thinking decidedly "*rich*." Then this *vein* "in a moment, in the twinkling of an eye," becomes a thread which we follow through the "dim cells and winding galleries" of these two volumes, as Theseus followed that of Ariadne through the labyrinth of Crete; until lo! it is multiplied into a "woof" so "natural" that we can almost hear the weaver's shuttle playing through it with alternating motion. The "woof," however, is but a transition stage—another metamorphosis and we

stand upon a "sub-stratum," of a sort that would puzzle Lyell himself to describe.

Even without the charm of verse, which we are persuaded could easily have been given it, and which will be in the second edition, this is "perfect, past all parallel." It is the most remarkable instance on record of the ease with which things the most opposite and dissimilar can be fused into one homogeneous and sparkling whole. Genius is the only true amalgam, and the writer of this preface is its fortunate possessor. Did we believe in the transmigration of souls, we should insist that the soul of Ovid was now fluttering with restless wing within the mortal bodyof M. Mott's personal friend and kinsman, the translator of this "first American edition of Velpeau's great Elementary work on Operative Surgery." Insist upon this, did we say? we think better of it. We will maintain against the world in arms, that if Peter S. Townsend had lived in the first century after Christ, Publius Ovidius Naso, with all his harmonious and smoothly flowing numbers, would have been hissed and hooted from every bath and portico in Rome. This is our "sober second thought"—our deliberate opinion.

Let us, however, continue our examination. Enthusiasm sometimes, like murder, *will* out; and we found it impossible to wait until we had finished the examination of the whole paragraph, before we expressed our admiration of the writer's fancy and genius. In the second sentence, as near as we understand it, the vein re-appears. We left it a "substratum"—but, *quod fuit anté, reformet.* Soon, however, it experiences another astounding metamorphosis, being changed into something like a *finger-board*, and in this shape seems destined to be permanent—*armataque mansit imago.* As a finger-board it is quadripartite in its function—it points four ways at once, to "what has been done," to that which "still stands," to that which "will continue to be approved of," and lastly, to "speculations" and "experiments" which are converted into "paths," "primrose dalliance" in which is "to

be avoided" as exposing to "visonary pursuits," whence would come "researches" ending in "similar abortive results." If the reader does not admire this, he must be as fastidious as a sick monkey. We *will* restrain any further expression of our admiration for fear of being thought crazy. Let, then, "expressive silence muse" the translator's praise.

Our next quotation is of the self-abnegatory and laudatory variety. The self-abnegation is positively excruciating, though it is by no means the best specimen we could find.

"We confess that it is with pride we present this work to the Profession; not so much, perhaps, from any pretensions we might make, in respect to the exactness and fidelity of the translation, or the composition and substance of the vast amount of new matter superadded, as from the conscious conviction we feel that there can be found nowhere, in any language, a surgical work so thoroughly complete, and so judiciously classified in (as has already been said in the Prefaces to the First Volume) the abundant and highly interesting and invaluable details which it comprehends, of surgical processes and discoveries, and surgical anatomy and relations, traced down with astonishing erudition and acute discrimination, by the learned author, Professor Velpeau, from the earliest epochs to the present day."

The construction of this sentence is altogether Ciceronian —it is musical in the extreme; but it is not this we wished particularly to notice. We also observe here the disposition of our translator to use the synechdoche. We have already seen how apt he is to put the part for the whole, the less for the greater. Here he puts the *thing containing* into the *thing contained.* He classifies a book in its details; whereas most authors attempt to classify details in a book.

But the point of most interest to us in this paragraph still remains. It is a new and very curious psychological fact discovered by our translator, viz: the existence of a "*conscious* conviction." Here is something that will astonish the phrenologists, and they are not easily surprised. It will dilate the eyes of a neurologist. It will even arch the eyebrows

of a mesmerist. As yet this fact is a matter of personal experience with the writer; he "*feels* a conscious conviction;" but the evidence of so acute an observer will of course be taken as sufficient. The fact then exists. Is it a general one, or is it confined to this particular individual *homo*, making him "a marvel to the nations?" The answer is of immense importance. It would also be interesting to know in the present instance what the conviction is conscious of—whether, for example, of ignorance (as is not improbable), or crime, or inconsistency; nothing of this has been vouchsafed to us. We have tried our best to form some conception of this curious thing. The nearest approach we can make to it, is to imagine the feeling that a pregnant woman—"one who loves her lord"—may have, when near the end of her term. She has, it may be presumed, a *conviction* of her pregnancy; and if, as some contend, the yet unborn child is *conscious* (no matter of what) why of course the mother now and then *feels a conscious conviction.* Does the translator wish to create the impression that he is *pregnant?* His "estimable friend, M. Velpeau," some years ago found a man whom he pronounced "pregnant with his little brother." Is our translator that interesting individual? We pause for a reply.

We turn now to the auto-biographical portions of these unique prefaces. These we find scattered about like *disjecta membra*, and we have expended some labor in collecting them from the two volumes. This is a labor, however, which we have cheerfully performed, partly for the sake of the translator, partly for that of the profession of which we are both members, and partly for the sake of Dr. Mott's country, to which they will prove "a precious treasure," that "may be perused and re-perused." They may serve to infuse new energy into some flagging spirit; they may give heart to some "fôrlorn and shipwrecked brother." They are as few and as precious as the sybilline leaves; for our translator, like other men, is somewhat careless in this particular. He seems to forget that some of the interest which attaches to great men, attaches also to all those with whom

they are connected; and that, however humble he may think himself to be (and really his humility is astonishing) and however humble he really may be, some of the interest which attaches to Mott, attaches likewise to himself. It is the quality of greatness to—

"Spread undivided, operate unspent."

Men of such "incomparable genius" as Mott, are not only great in themselves, but they are the cause that greatness is in other men. Witness, for example, the case of Dr. John Murray Carnochan, who figures in these pages as a sort of metallic reflector of Dr. Mott's surgical light, partly because he, as well as Dr. Schmidt, claims to have been the first to divide the masseter muscle, but mainly because he was "one of Dr. Mott's pupils"—so it is carefully set down in the book, and in this particular he has a decided advantage over his competitor. Our translator, we say, has forgotten that, like some of the metaphors we have noticed, Dr. Mott is tripartite, or even quadripartite; that he is even more to him than Cerberus was to Mrs. Malaprop—"three gentlemen at once;" in short, that he is kinsman, preceptor, friend, and associate translator. Yet he has sometimes had this fourfold relation in view. Else we cannot account for the overwhelming impression made upon him by the man who did *not* first remove the lower jaw; nor for the 800-diameter-magnifying power of the lens through which he has gazed at the man who is the first ("in America") that amputated at the hip-joint, the first that sacrificed a black cock to Esculapius, and who is the first in the hearts of his countrymen. We may then "be doing a real and great good" in reminding him of it. We confess, moreover, that we are actuated by another motive—the fear, that, when the translator should recollect himself and not find these things noticed, he would "have it in a particular ballad else, with his own picture at the top of it."

But we will not detain the reader any longer from these interesting excerpts.

"I do not wish nor intend to dwell upon my own part in this performance, as I make no special pretensions to Surgery, however much I may admire the commanding solidity of its structure, over that of any other branch of Medicine, or however ready I may have been to avail myself of all the occasions which have presented themselves in my professional career, of indulging in a practical application of its principles, at least, to many of its minor operations and elementary processes.

"My professional labors have, it is true, been for the greater part of my life confined more to the practice of Medicine itself, strictly so called, and especially directed to the investigation of febrile diseases, as personally examined and investigated by me under all their varied aspects of climate and topography, and the influence of the latter on the human organization. I shall, however, never cease to reflect with pleasure, hard as the task has been, in the thought that in what concerns the great department of *Practical Surgery*, I shall have left some testimonials (lasting I trust) of my industry at least, and of my zeal to promote the advancement of art whose high utility all the world, *especially since its brilliant progress within* 30 *and even* 10 *years past*, now concede to be open to palpable and actual demonstration, and as indisputably entitled to be ranked as an exact science, and as far beyond the reach and assaults of empiricism as mathematics itself."

We have *italicised* a very interesting piece of information conveyed in the second pargraph. It will, we are persuaded, prove no less surprising than agreeable. What this brilliant progress of the world consists in—whether in accelerated motion around the sun or on its own axis, in morals or steam, in the arts of war or of peace—or in something entirely different—we are not informed. It is enough to know that the world has overtaken surgery, and conceded to it a proper rank. We somewhat congratulate ourselves that this forward movement dates from about the period of our nativity, and that its recent and marked acceleration is about co-eval with our manhood. We can scarcely persuade ourselves that these are mere coincidences.

There is another bit of information, dropped here by the translator, which, as being of less interest, we did not italicise. We mean the fact that reflection, which has heretofore been a hard task, will hereafter be easier. The mode of reflection "in the thought," is peculiar to him.

"I had also, in two different sojourns at Paris and Montpellier, in 1821–'22, and at Paris again in 1827–'28, had the happiness to become acquainted with, or to follow upon the clinical lessons of, some of the most illustrious of these men, as well as of their predecessors. It was natural that I should recur back with satisfaction of hours agreeably, if not profitably, spent under the instructions of such men as the Barons Larrey, Dubois the elder, Percy, and Dupuytren, Cuvier, Lacepede, Delpech, Richerand, Thenard, Gay-Lussac, Boyer, Roux, Lallemand, Civiale, Lisfranc, Cloquet, Velpeau, &c., &c."

Thus it is seen that, so far as preceptors are concerned, our translator has certainly been one of Heaven's favorites. Mott was the Alpha, Velpeau the Omega. Mott began the list, Velpeau ended it; so that, in reference to the equal greatness of the two men, we may say that Mott was the beginning of the end. But this is not all. The translator tells us in a note that at "the same sitting of the Academy" he absolutely *saw* La Place, Berthollet, Chaptal, Portal, Desgenettes, Legendre, and others! There is no telling what influence such a sight may have had on him. With such a galaxy of preceptors to teach the fledgling how to make his first essay, and with such incentives to sustained effort as were afforded by what he saw, it would be strange indeed if he had not reached his present exalted position before the world. Nature would deserve reprobation as a niggard of no ordinary character towards him. But his petals fortunately were not "nipt before they blew," nor "died they on the promise of the fruit." As if conscious of the interest that would be felt in him, he gives a list of part of his writings. It is with a feeling akin to indignation that we find this list in the degrading position of a foot-note printed in brevier.

We thus plant it, clothed in good small pica, at the top of the 67th page of the 6th volume of the Western Journal.

"I will refer here, to some of my principal writings on those subjects:

"1. My *Report* on the *Fever* which prevailed in *Bancker Street*, New-York, in the Summer and Autumn of 1820.

"2. Account of the *Yellow-Fever* of New-York, in 1822.

"3. Account of the Weather, Topography, and Diseases of the Bahama Islands, West Indies, 1823–'4–'5, published at New-York, 1826.

"4. Account of the Black Vomit, or Yellow Fever, at Havana, Island of Cuba, West Indies, 1830.

"5. Sundry Essays in various Medical Periodicals.

"6. My *Report* on the Yellow Fever, imported from the West Indies into Rondout, Ulster County, State of New-York, on the Hudson River, 100 miles North of New-York city, in the summer of 1843."

We regret that none of these productions have ever fallen under our notice. The editions were undoubtedly exhausted in the East. Still from the mere enumeration we have partly gathered and partly surmised two or three things. One is an auto-biographical item, viz: that our translator in the course of his varied life has worn palm-hats and smoked cigars in the West Indies, has eaten bananas and sucked oranges in their native clime. Another is a geographical fact, not noted in any work that we have seen, viz: that the position of the State of New York is on the Hudson River, 100 miles from New York city, in the summer of 1843. We commend this to Mitchell and Tanner.

This is positively all we know of the "birth, parentage, and education" of the translator of Velpeau's Operative Surgery. The account is lamentably meagre; it is unsatisfactory and provoking in the highest degree. We trust that he will yield to our earnest request to devote the preface of the third volume to his own glorification, as he has that of the first to the praise of Velpeau, and that of the second to the praise of Mott. He has apotheosised his two preceptors;

he has placed them among the immortal; let him crown the work by "embalming" himself.

Let us pay our respects now to the preface of the associate translator. It is to him in the end that must be credited all the beauties and elegances we have thus far pointed out. He is the *final cause.* He advised and supervised the translation; he stands sponsor for Dr. Townsend's ability and faithfulness. All this the translator tells us repeatedly; it is a sort of feather in his cap. And all this the associate translator tells us in "his own special" preface; it is a sort of feather in his cap. This preface, whilst it preserves a striking resemblance to those we have noticed, has at the same time something a little uncommon about it. This is as it should be. It would not do for one of such transcendent genius to write a common preface. If not exactly derogatory, it would not comport with true dignity. Moreover he must keep up the impression already made; he must continue to dazzle us. He must have an *epistolary* preface, for a reason very similar to that for which Bonaparte made the campaign in Egypt. This epistolary preface consists of two letters, one from *M.* Mott (thus we write him, and thus he likes to be written) to Velpeau, and one in reply from Velpeau to Mott—the whole eked out by a case of removal of the jaw, which M. M. thus takes occasion to relate *in limine.*

Of the first letter we may say what was said of the love-letter of a distinguished individual that "if not so good as we expected it is the best we ever heard." As there was a good surgeon spoiled when Dr. Townsend turned his attention to "febrile diseases, as personally investigated by himself;" so a great letter-writer was spoiled when his preceptor turned surgeon. We are convinced he might have achieved a great reputation in a difficult department of literature. He might have rivalled Walpole, Mad. Sevigne, Lady Montague, Pope, Byron, and many others, whose names we do not now remember. But in that case, the arteria innominata might never have been tied; certain "great and master

operations" never been performed; divers "noble discoveries and improvements" never been "created into existence;" and sundry "new paths" never been "struck out." It is better therefore as it is. Though he might have witched the world as a letter-writer, it is better to have captivated his pupil's fancy and thrown a light of glory over his native country by cutting off legs and tying arteries. Meantime we have this epistle to show his versatility. It is an elegant specimen, and we should not be surprised if some day it figured in what is yclept the "Complete Letter-Writer," hawked about barrooms and steam-boat landings by dirty-faced and ragged little boys.

There is an old adage to the effect that "he who drives fat oxen, should himself be fat." It will be seen that Dr. T.'s preceptor fulfils all reasonable requirements in this particular. Many of the excellences pointed out in the pupil's prefaces, are also found in the preceptor's. Indeed there seems to be a very "sembable coherence" betwixt the two. There is the same happy tautology, the same inconsequence in many of their inferences, the same disregard of numbers and cases, and the same heaping of metaphor upon metaphor with most impossible conveyance. Moreover the sentences of each have the same sluggishness in getting towards a termination, dragging their slow length along like an Alexandrine or a wounded snake, as if the channels of thought through which they passed were convoluted like the intestines or the seminiferous ducts.

To show how fit a "sponsor" M. Mott makes, here are samples of the expressions he uses: "an inestimable *archive;*" "compendiums of a *limited* character;" "profited *of* opportunities;" "signify commendation *to* an undertaking;" "*mutually* acceptable to *both.*"

But here is a whole sentence—

"Because I felt that by associating my labors with those which have received the approbation of your judgment, and which your genius and untiring industry have wrought out in

your estimable work, as an enduring monument to your fame, I might find an appropriate place and guarantee for indulging the ambition that I, like others, must naturally have of seeing legitimately transmitted, through an orthodox and approved organ, for the judgment of an impartial posterity, an authentic account at least (if only at best but an abrégé one) of my *stewardship* also in the great field of surgical science. This so far as concerns myself, (and independent of perhaps paramount considerations, to give wider diffusion upon this continent to your great and useful work,) I felt admonished by the time of life at which I have arrived, to be be due as well to myself and my own reputation, as to my conntry and profession."

We have already seen how the pupil applied the "flattering unction," and here we see how complacently the first preceptor takes it. He is charitable, too; he distributes it freely; and a little further on Velpeau repays it all liberally. In fact the harmony among the three is beautiful. They touch hands all round. First Townsend tickles (if we may use so familiar a phrase) Velpeau and Mott; then Mott tickles Townsend and Velpeau; then Velpeau tickles Mott and Townsend. We beg the Frenchman's pardon; but, for the nonce, we must take him in the company we find him.

It is evident, moreover, from this sentence, that the editor thinks himself all the translator says he is. He acknowledges no equal other than the author of these "Elements." He brooks no other rival near the throne. Velpeau is his *alter ego.* We can fancy him saying in the slightly changed language of rare Ben Jonson—

> ——"Great and high,
> The world knows only two, *Velpeau* and *I.*"

He will form a surgical *duumvirate.* He will share the world with the great Frenchman, but with nothing meaner. He will give him the Eastern continent, whilst he himself—the great American Surgeon—takes the Western. Or to express it in the language of old Terence—

> "Curemus æquam uterque partem; tu alterum,
> Ego item alterum."

One more quotation, and we are done.

"As such, then, my dear sir, I have ventured thus, while life is so short and art so long, to ask for myself a niche in the great edifice of surgical facts and truths of which you are the constructor and owner. I have to ask of you the privilege that I may be allowed within this storehouse, containing so much of the treasures of our science, to make safe deposit and registration of the detached fragments of the scaffolding at least, of that extended work of my own on Operative Surgery, which, as you are aware, I have for so long a time meditated, and of which these offerings must for the present be received as the pledge."

This is a gem in its way, for the equal of which we must refer to a quotation already made. Observe: M. Mott wants first a "niche" in Velpeau's "edifice"—a place to put his body, or his statue, or his "memory" after his kinsman's "balm" shall have descended upon it like dew from heaven upon a flower. But this will not do; so he likens his friend's beautiful edifice to a "store-house," and asks to throw into it the "fragments" (viz: loose planks and pieces of scantling) "of the scaffolding" of his own abandoned building. We repeat, the beauty and classic grace of this can be equalled by nobody but Townsend.

There are many other things in these prefaces deserving of notice, but we must forbear. The critical reader will see that, even in the sentences we have quoted, we have omitted many things worthy of remark. We need scarcely add that those who succeed so well in putting their own thoughts into English, succeed quite as well in translating the thoughts of another man from a foreign tongue into English. And now we wish to know if the men who thus write deliberately, and not in the hurry of supplying a periodical press, have not a right to "pride themselves on their work?" to congratulate themselves on their knowledge of the vernacular? to speak of "inexcusable and gross blunders" in other works? and to assume a high tone about the "depreciation of the standard of American education and character, by the

book-making attempts of certain adventurers in the profession?"

It was our intention now to take up the text, in order to fulfil the promise we made in the beginning; but the relentless tyrants of the printing-office tell us we must stop. We shall take the first opportunity to redeem this promise. For fear this may not be before the issue of the third volume, let us beg the translators, for the sake of good taste, and of the American press, the character of which has been so discredited, to make their translation less literal; to give English idioms in the place of French; to drop the French prefix *M.* before American and English names; not to place French words in brackets after giving the proper translation; and above all not to use a French word when there is an equivalent in English. If, in addition to this, they will remove the citations to the bottom of the page, and will never include in brackets more than one line between a verb and its nominative, an adjective and its noun, a preposition and the words to which it relates, they will improve the appearance and enhance the usefulness of these volumes.

Meantime, until we can spread something of it before our readers, we beg leave to assure them that despite the inconsiderate and silly laudations of the translator and editor, despite the bad taste which seems to have presided over the enterprise from the beginning, despite the want of grammatical knowledge everywhere displayed, the book is a good book, and a valuable book. It could have been written by no common man. It could not have been written at all in this country, simply for want of books from which to compile it. Yet it is by no means going to supercede every other book. As a text book, for which purpose it is so much vaunted, we should never think of placing it in the hands of a student. But more of this anon.

C.

SELECTIONS

FROM

AMERICAN AND FOREIGN JOURNALS.

Magendie's Introductory Lecture at the College of France. The following remarks, which we extract from the Epoque, were made by Magendie, on opening his course of physiology at the College de France:

I have long been in the habit previous to resuming my lectures, of devoting a few minutes to an inquiry into the actual state of medicine, and to an examination of the modifications which the theory and the practice of medical science may have undergone during the preceding year. This retrospective analysis will to-day furnish us with a certain number of reflections, the importance of which it would be in vain to endeavor to conceal, referring as they do both to the present and the future state of the profession.

Medicine and medical practitioners have attracted much attention during the last year. Many members of our profession have sat in congress, government has issued committees, the ministers have made solemn promises, and it is said that a law to regulate our destinies will shortly be presented to the Chambers. Everything, therefore, seems to smile upon us, and the wind swells our sails. But in the midst of these favorable circumstances—of these happy omens, alarming symptoms are discerned. The future prospects of medicine are the subject of deliberation, but ought we not sooner to deliberate on its existence.

Medicine can only exist but inasmuch as patients have faith in it, and claim its assistance. It is not by theories that it lives, but by clients. Now it is impossible to conceal to ourselves that, at present, a certaiu proportion of the pub-

lic abandons classical medicine, ironically called *old medicine*, and throws itself into the arms of new systems, thereby firmly believing that it associates itself to the progress of intellect.

Homœopathy—for it is more especially to it that I allude—aspires to nothing else than to overthrow the entire medical edifice with the arms of ridicule and contempt. And do you know how many specifics it numbers? Three hundred and fifty! With a few globules of aconite, at the dose of a billionth of a grain, it produces the same effects as a bleeding of twelve or sixteen ounces. You exhaust your intellectual energies to find out the seat and the nature of a disease.—Vain efforts! Homœopathy shows that every morbid symptom has its origin in psora, a kind of imponderable agent, which therapeutic substances reduced to unimaginable proportions alone can combat. Thus it is only with infinitely small means that infinitely large effects can be produced.

But, you will say, the persons who believe such absurdities are poor dupes, and the men who prey upon their weakness, hardened quacks. You are perhaps right; but listen to those whom you meet in society, and you will be surprised to hear of the wonderful cures that homœopathy has performed. No doubt its promises are often cruelly falsified, but the failures are but little spoken of. Moreover, we must not deny that many patients have recovered their health, in a most unhoped for manner, whilst under homœopathic treatment. It is easy to understand that enthusiasm or the love of gain should take advantage of such facts to exalt the marvels of homœopathy. This brings us back to a question which I have often raised, and which I have endeavored to elucidate by experiments for the last ten years—viz: what is the influence of treatment on the progress of disease?

In hospitals, as well as in private practice, we must first take into consideration the influence of the mind of the patient. Now there can be no doubt but that a patient who takes a medicine, experiences immediate benefit, from the conviction that it will favorably modify his disease. If this favorable result takes place, what has been the real share of the medicinal substance administered! Medical men are always inclined to attribute the cure of the disease they treat to the means which they have employed; but recollect that disease generally follows its course, without being influenced by the medication employed against it. Thus it is that you are often much deceived. A given medicine will succeed in an apparently serious case, and will fail in another case

of a less dangerous character, without your being authorized to attribute to yourself in any way the success or the failure.

These reflections explain at once the cures of which homœopathy is so proud. Homœopathy, instead of bleeding a patient, will place gravely on his tongue a globule of aconite, which he will swallow with confidence and faith. You then see the disease improve. But it would have improved just as well without globules, provided some singular operation had struck the imagination of the patient. It really is too great a stretch of credulity to believe that a globule prepared by the formulæ of Hahnemann can contain any active principle. But, on the other hand, any one who has seen disease, must at once admit that this same globule may exercise, through the imagination, a powerful moral effect. You must not, indeed, accuse me of partiality towards homœopathy, when I state that I firmly believe that a physician would cure a patient sooner with globules, if the patient has faith in them, than with the most appropriate medicinal substances, if he distrusted their action.

What I state respecting medicinal substances is equally applicable to bleeding. A patient is seized with the symptoms to which the term inflammatory has been applied, and asks to be bled, believing that the loss of blood will cure him. You open a vein, and the abstraction of a certain quantity of the vital fluid is followed by an amelioration of the symptoms. But take care how you interpret the fact; the improvement may be owing to the moral effect produced, more than to the venesection. I will mention as a proof what I have often observed in my wards at the Hotel Dieu. A patient laboring under acute disease—pneumonia for instance—enters the hospital, believing firmly that he ought to be bled; I bleed him, but merely to the extent of two or three ounces; too small a quantity for the circulation to be in the least influenced by its abstraction. Nevertheless, the patient becomes more calm, and says he is better. A mere trial of bleeding will thus often suffice to arrest the progress of a disease which under another physician would be treated by abundant depletion. For more than ten years I have not found it necessary to have recourse to copious bleeding; in other words, I have rather endeavored to act on the mind of the patient than on the circulation, and I have no hesitation in asserting that my practice has not been the less successful. Indeed, were I to tell you my mind entirely, I should say that it was more especially in the hospitals, in which the

most active treatment is adopted, that the mortality is the most considerable. You must not, however, think that I wish to proscribe bleeding; I only wish to warn you against the deductions that may be drawn from its results.

After mentioning various other pseudo-medical delusions, Magendie continued:

It is with regret I have laid before you this melancholy picture of the deplorable abuses which exist in the medical world; I am afraid no laws on the practice of medicine will be able to eradicate them. The quack will always contrive to elude the wisest regulations, for he knows that patients want to be deceived. Yes, gentlemen, we love error, and often refuse to yield to evidence, even when it is proved to us that our good faith and credulity have been imposed upon. Of this fact I will give you the following proof. A lady, a fervent believer in mesmerism, asked her niece, who was poorly, for a lock of her hair, in order to consult a somnambulist. The niece, wishing to try the credulity of her aunt, gave the hair of her maid instead of her own. A renowned somnambulist was consulted, and at once recognised, by the hair of the maid, all the symptoms presented by the niece, whose sufferings she minutely described, to the great edification of the lady. The latter was then informed of the trick that had been played. You would naturally have thought that she would have recognised the imposture of the somnambulist. Not at all; she preferred concluding that the maid servant had the same disease as her niece, and obliged her to submit to a regular treatment, as if she had been poorly, although at that time in the best possible health.

Thus, many causes contribute to throw uncertainty on the result of medical treatment, either rational or empirical.—Sometimes it is the patient who will be deceived; sometimes it is the quack, who deceives knowingly; sometimes it is the conscientious physician, who, nowithstanding his honesty, allows himself to be led into error by an erroneous interpretation of the means employed.

In the presence of such difficulties, it is less desirable for us to endeavor to lay down some law, than to give to our studies a more serious direction. Instead of demonstrating to pupils theories already framed, and often very badly framed, it would be better to teach them rather to study facts, and to take as their guide experimental observation. We have seen the rise, and, in the course of a few years, the fall, of a system which rested entirely on a single undefined word—inflammation. This system, opposed to all physiological ideas,

was erroneously called "physiological medicine;" and yet its author was neither devoid of talent nor of knowledge.—Such, no doubt, will be the destiny of those pretended methods of treatment which are, in general, founded on visionary speculations, have fashion for support, and dupes for followers.

As for us, gentlemen, we shall continue, as we have hitherto done, to study phenomena in the organs in which they are accomplished. Although the part of the physician may not be always as efficacious or as active as we could wish, when disease requires assistance, we may still, by well-judged intervention, assist Nature in overcoming the functional derangements which give rise to disease. We shall more especially, therefore, endeavor correctly to appreciate the physiological action of organs. How, in reality, can we have recourse to rational treatment when we are ignorant of the normal conditions of the economy.

It will be perceived that Magendie has taken advantage of the opportunity furnished him by a cursory sketch of the popular medical delusions of the day, to give utterance to peculiar opinions respecting the influence of medicinal agents in the treatment of disease—opinions which stamp him as nearly a sceptic with reference to their therapeutic powers. The partial scepticism of M. Magendie as regards medicinal agents has been long known to French pathologists, and has contributed not a little, with them, to throw discredit on his physiological experiments. He may be considered the most prominent representative of the French 'expectant' school—a school which now numbers but very few votaries among our neighbors, notwithstanding the opinions to the contrary generally entertained in this country. The great reputation of Magendie among British physicians, which induces most medical travelers when in Paris to hasten to his wards at the Hotel Dieu, of which he is one of the medical officers, will partly account for the erroneous views respecting modern French practice that are entertained by many of our countrymen. Magendie has experimentalized himself into the belief that nature requires but little other than dietetic and hygienic assistance when disease is present. Discarding, consequently, the accumulated wisdom of former ages, he treats his patients, conscientiously, according to these views, and it is generally considered by his Parisian colleagues with but indifferent success.

The error into which Magendie has fallen exemplifies the danger of laying too great stress on the results of mere experiments, sometimes as fallacious sources of knowledge as any. The same may be said of the numerical system when pushed to the extreme, and resorted to without due qualification, as a means of therapeutic research. Both these modes of investigation, although admirable in themselves, when abused, or used as mathematical formulæ, nearly inevitably lead to that most lamentable of medical errors, scepticism in the power of therapeutics.—*London Lancet.*

Prescription of Castor Oil.—It is worth knowing that the nauseous greasy taste of castor oil is pretty effectually disguised by mixing it with milk, and adding a little nitric æther and oil of cinnamon.—*Druitt.*

Graves on the Relapse Periods of Ague, and the Indications of Treatment.—Having noticed with much anxiety and accuracy the course of a quartan ague for twenty-seven months, I constructed a table for the purpose of obtaining a connected view of the number and dates of the fits. This table had been made for some time before I discovered that it contained *data*, which authorize us in concluding that the law regulating the periodicity of agues applies not only to the succession of paroxysms, but is extended to the free intervals between them—in other words that the same law of periodicity which governs the disease, while it occasions fits, continues likewise to preside over its latent movements during the interval when no fit occurs, and thus the true periodic rate is carried on, though as in a clock from which the striking weight has been removed, the usual signal does not mark the termination of each certain definite portion of time.

This law, now for the first time brought to light, exhibits a new example of the tenacity with which periodicity clings to a disease, when once firmly impressed on it, and recalls a very similar phenomena observed with respect to the catamenia, which, having been suppressed for many months, not unfrequently reappears on the very day on which the monthly period should have occurred, had no such suppression taken place.

A knowledge of this law will, therefore, prove of the greatest importance, in enabling us to guard against the return of the disease; for, for several weeks after the series of fits has ceased, we can point out to the patient on what days they are liable to reappear; and, consequently, he can upon those days more effectually guard against the occasionally exciting causes of the disease, such as cold, fatigue. &c.

In reference to the treatment by quinine, the writer believes the practice generally followed to be wrong. He objects to the continued use of the remedy, as thus the constitution becomes accustomed to its influence when the ague-fit is absent, and then that influence is weakened.

The mode of treatment which I adopted was calculated to avoid this inconvenience. It consisted of giving the quinine for four successive days, and intermitting it for the six following days, thus embracing the interval comprehended in three fits. By these means it was hoped to keep the system sufficiently under the curative influence of the quinine while we avoided rendering the constitution too familiar with the medicine, the six-day interval preventing it from becoming saturated by the quinine.—*London Lancet.*

Remarkable Case of Paraphymosis.—Mr. Hancock was consulted on the 7th of January, 1843, by a gentleman aged sixty-five years, suffering from paraphymosis. The penis was much swollen, and the prepuce, especially at the under part, much thickened, attended with great pain. He stated, that for three months previously he had experienced sensations of tightness and heat round the cornea glandis, that the parts occasionally swelled, at times being better, at others worse. He described the sensation as that of a tightness, extending from the tip of the penis to the cornea glandis, underneath which it had increased rapidly for the last three weeks, so much so that he was induced to come to London from Suffolk, for advice. For the last two years he had ridden very spirited horses, and being a fat, heavy man, had frequently struck his penis against the saddle, but without at the time experiencing any inconvenience. Has suffered much pain latterly, as if a string were tied tightly round the cornea glandis; has had a double hernia, of large size, for several years, and has been in the habit of wearing trusses having strong heavy springs. His prepuce was not tight naturally.

Mr. Hancock endeavored to reduce the parts in the usual manner, and thought he had succeeded, but in two days the patient returned with the paraphymosis as bad as before, having suffered severely from the endeavors to remove it. Mr. Hancock having drawn back the skin, divided the thickened mucous membrane with a sharp-pointed bistoury—as was usually done in cases of paraphymosis—and desired him to go home, where he would visit him on the following day. On the 10th he again saw him, and found him as bad as before, not at all revived; the glans and the whole of the penis were swollen, the penis being twisted, inflamed, and exceedingly painful. He examined the parts very carefully; the skin was free, as was also the mucous membrane, which had been completely divided by the cut made yesterday, but he found a band of condensed cellular tissue, about a quarter of an inch wide, encircling the cornea glandis. and which he concluded was the cause of all the mischief; he consequently cut down through this to the fibrous covering of the corpus cavernosum, with immediate and decided relief to the patient, who is now nearly well, although thickening of the prepuce still exists.

Mr. Hancock related this case to the Westminster Medical Society as presenting some points of interest; the paraphymosis was not the result of any gonorrhœal discharge, or sores on the glans, its production was neither preceded nor attended, until quite latterly, by any active inflammation, but the mischief apparently was produced by gradual thickening and induration of the cellular tissue surrounding the cornea glandis, probably aggravated by the constant dragging exercised on the parts by the strong truss he was in the habit of wearing. Another point worthy of notice was, that in the common forms of paraphymosis the result of acute inflammation of the prepuce, originally too contracted, the stricture was situated in the mucous membrane lining the prepuce, and the mischief was at once removed by dividing it with a bistoury from within outwards, without cutting through the integuments, but in the case here related, the mere division of the mucous membrane, as commonly performed, was attended by no benefit whatever, as it was not until the subsequent day, when he cut down on the cornea glandis to the fibrous covering of the penis, that his patient was at all revived.

Within the last few months, he had been consulted by two other gentlemen for spontaneous thickening and induration of the prepuce, for which they could assign no cause. In one

it induced phymosis, in the other paraphymosis. In the latter he cut the mucous membrane, but as he never saw the patient again, he had no means of knowing the result. However, the case here related showed that in spontaneous paraphymosis the stricture may depend upon thickening cellular tissue, and not upon any change in the mucous membrane.—*Ibid.*

Electro-Magnetism in a Case of Obstruction of the Bowels. The object of the following case is to show the effects, apparently and probably really produced by electro-magnetism. The patient, a widow lady of about 55 years of age, was taken, ten days previous to my seeing her, with bilious vomiting and intense pain in the bowels, accompanied by constipation. The pain ceased in three or four days, but the vomiting continued, and was now stercoraceous. She had been bled to faintness, had taken calomel until the gums were sore, had taken one drop of croton oil every hour, for several doses, besides various other cathartics, and repeated ordinary injection. I found her on the 11th day, without fever, bowels somewhat tender, and vomiting fæcal matter every hour or two. The injections before used had been given with a common syringe and allowed to come away immediately. I used the rectum tube and force pump, but could not throw up more than a quart at once, which, however, was compelled to be retained for half an hour, when it was suffered to pass, and after a little repeated. This was continued for six times, until the injection, which at first returned mixed with fæcal matter, came away, after being kept up an hour, almost as clear as when given. The symptoms nearly the same; there was evident obstruction, and, probably, invagination of the small intestines. I now used Mr. Pike's electro-galvanic apparatus, applying a pole on either side of the abdomen; this was continued for twenty minutes, when there was evident commotion of the bowels, and in ten minutes more was a regular evacuation, thin and small in quantity, but distinctly of a fæcal character and the first in 11 days. The vomiting ceased entirely; two hours after, the battery was again used, and in twenty minutes produced a free operation. A dose of oil operated in the usual time, and the patient rapidly recovered. There was no doubt in my mind but the favorable change was produced by the

electro-magnetism, though more probably by the successive shocks producing muscular action, rather than by electro or magnetic agency.—*N. Y. Jour. Med.*

Medical Examinations in England.—The London Medical Gazette, for March 6, 1846, contains a Report of the number of candidates examined in Great Britain for Diplomas and Licenses in Medicine and Surgery, and the number of such Diplomas or Licenses actually granted.

It appears that during the three years 1842–'3–'4, the Royal College of Physicians examined 161 candidates, and granted 160 licenses, the rejections being 0·62 per cent.

The Royal College of Surgeons examined 1776 candidates and granted 1576 diplomas; the rejections being 1·12 per cent.

The Society of Apothecaries examined 1137 candidates, and granted 953 certificates, the rejections being 16·1 per cent.

The Univerrsity of London examined 114 (first examination) and passed 72, the rejections being 36·8 per cent. On the second examination, the examined were to the passed as 67 to 60, the rejections being 10·4 per cent.

The University of Cambridge granted diplomas to 10 persons, and licensed 9.

Oxford University examined 6 for diplomas, and granted it to them all. Of eight candidates for license 7 passed.

The number of persons licensed to practice amounted, in England and Wales, in three years, to 2,721, viz: 1,576 surgeons, 953 apothecaries, and 192 physicians, being an annual average of 907 licensed practitioners.—*Ibid.*

Large Biliary Calculus.—The person who passed it was a female aged 78 years, of a large corpulent frame, and a biliary temperament. She had symptoms of jaundice on the first of May, 1844. She was attended by a neighboring physician till June 6th, when I was called in. Her skin and every part of her body was suffused with bile, and of a dark yellow color. She complained of pain about the præcordia and right hypogastrium, with total loss of appetite, accelerated pulse, white tongue, thirst, diarrhœa, ash-colored stools, &c.

As she had been thoroughly mercurialised, I put her on the use of a strong alkaline solution, and large doses of the extract of conium, diet of eggs, &c.

By the 17th she was no better; and as symptoms of phlogosis were still manifest, I concluded there must be inflammation of the common duct, &c. I bled her freely, and applied a large blister over the region of the duct, and put her on the use of oxalic acid, half a grain in a cup of cold water every three hours daily.

Under this treatment she improved steadily, so that by the 25th her stools became bilious, and her appetite returned. In a few days she seemed quite well.

She remained free from the disease till the first of October following, when it returned and became fully established. On the 22d she commenced the use of the oxalic acid, on which she placed great reliance. She had taken it about ten days without any relief. Sitting on her chamber at that time, her stools being thin she heard something fall in the vessel like a stone. She rose up and inspected the stool, and there she found the calculus I have sent you.

Her husband washed it off, and undertook to break it with a hammer; but finding it so hard and *curious* he desisted, and laid it up for me. Her jaundice soon disappeared, and she has enjoyed excellent health ever since.

It was originally uniform on its surface, and about as large as an ordinary nutmeg, and of much the same color. but rather more ovate. That part of the outer layer which is absent, was broken off by the hammer in the gentleman's attempt to break it down.

What agency the oxalic acid had in relieving the disease in the first instance, or removing the gall-stone in the last, your readers will of course, judge for themselves.

The calculus weighs now ʒiss; and I presume, before any part was broken off, it must have weighed ʒij.—*Ibid.*

The Asiatic Cholera.—In a late number we stated that the Asiatic cholera had spread through several provinces of Persia, and had given rise to great mortality in some of the principal towns. It is reported to have extended from Bokhara across the Persian frontier to Herat and Meshid, thence south of the Caspian to Teheran, and still further south to Ispahan. Recent accounts from Odessa, state that it has crossed the Russian boundary, and has appeared at Tiflis, taking a course

northward between the Caspian and Black seas; while according to the latest intelligence from Riga, it has broken out at Orenburg in the Uralian mining district, crossed the Volga, and appeared on the European side at Kasan, about 1200 miles from St. Petersburg. If these accounts are to be trusted, the disease has taken a somewhat irregular course, in a direction west by north; and it does not appear to have followed the banks of great rivers as in the former irruption of 1828–'30. The disease which reached England in 1831, prevailed in Persia for seven years, from 1823 to 1830. It appeared at Orenburg for the first time 1823; and was confined to this quarter for a period of five years. It reappeared at Orenburg in 1829, and its prevalence and fatality in this province were so great, that upwards of one-tenth of the inhabitants were seized with it, and one-fourth of those who were attacked, died. It reached St. Petersburg in July, 1831, and England on the 26th October of that year. At Tiflis, where it is again reported to have broken out, the mortality from the former epidemic was so great, that three-fourths of those who were attacked, perished. We shall take care to report any further information which may reach us respecting the course of the malady.—*London Med. Gaz. Med. Examiner.*

THE WESTERN JOURNAL.

NEW SERIES.—VOL. VI.—NO. I.

LOUISVILLE, JULY 1, 1846.

FOREIGN CORRESPONDENCE.

London, May 16th, 1846.

GENTLEMEN:—

I have supposed that an account of the curriculum of study, prescribed by the *University of London* for degrees in medicine, would be interesting to the readers of the Western Journal. I am the more inclined to adopt this mode of introducing myself to them from the fact, that my stay in London has been too short to allow of my going into details respecting any of the various hospitals in which this vast metropolis abounds; and I am not yet sufficiently acquainted with the *magnates* in our profession who have congregated in London, to jot down any new or instructive facts in relation to their history, practice, or merits. What I write is the substance of the *Regulations of the University of London for Degrees in Medicine.*

The student, entering the University, produces a certificate to the effect that he has completed his sixteenth year. He is then examined on the following subjects:—Mathematics, natural philosophy, chemistry, the classics, the English language, and outlines of history and geography. He shall not be approved by the Examiners un-

less he show a competent knowledge of the classics, including the English language, history and geography, mathematics, and either natural philosophy or chemistry. This is the matriculation examination, as it is called.

The examination for the degree of Bachelor of Medicine, requires that the candidate shall have been engaged during four years in his professional studies at one or more of the institutions recognised by the University. He is also obliged to certify that he has completed his nineteenth year; that he has taken a degree in Arts in this or some recognised University, or has passed the matriculation examination; that he has been a student two years at one or more of the medical institutions acknowledged by this University, subsequently to having taken a degree in arts, or passed the matriculation examination; that he has attended a course of lectures on four of the subjects embraced in the following list:—Descriptive and surgical anatomy, general anatomy and physiology, comparative anatomy, pathological anatomy, chemistry, botany, materia medica and pharmacy, general pathology, general therapeutics, forensic medicine, hygiene, midwifery and diseases peculiar to women and children, surgery, and medicine. In addition to this it is necessary that he shall have dissected nine months; have attended a course of practical chemistry, and have given sufficient attention to practical pharmacy to enable him to prepare medicines. The fee for this examination is $25; that for the former is $10.

The subjects upon which the candidates are examined are anatomy, physiology, chemistry, botany, materia medica, and pharmacy. It is in this part of the course that "exhibitions" and gold medals are awarded to the successful candidates for honors.

The candidate who most distinguishes himself, and who evinces sufficient merit in anatomy and physiology, or in chemistry, or materia medica and pharmaceutical chemistry, receives an "exhibition" of $150 per annum for the next two years. Under the same circumstances the first and second candidates in each branch receive a gold medal of the value of $25. After studying two years longer, the student is allowed to become a candidate for the second examination for M.B., after he has produced certificates to the following effect: of having passed the first examination, and subsequently to this, attended a course of lectures on at least two of the subjects embraced in the list above mentioned, and for which he had not pre-

sented certificates at the first examination; of having, after the first examination dissected six months; of having attended the surgical practice of a recognised hospital during other twelve months, and lectures on clinical surgery; of having attended the medical practice of a recognised hospital during other twelve months, and lectures on clinical medicine; of having, subsequently to these two years attendance upon surgical and medical practice, attended to practical medicine in a hospital or dispensary, during six months. The candidate is examined upon physiology, general pathology, general therapeutics and hygiene, surgery, medicine, midwifery, and forensic medicine. The fee for this, as for the first examination for M.B., is $25. Here, as in the United States, all fees are returned if the candidate be unsuccessful.

Scholarships, valued at $250 per annum, for two years, and gold medals estimated at $25, are given to the successful candidates for honors.

The examination for the degree of Doctor of Medicine, which is conferred in the United States upon candidates who have studied twenty-four months, is thus conducted here:—No candidate is admitted to this examination unless he have produced certificates which go to show that he has taken the degree of M.B. in this, or a degree in medicine or in surgery, at some other respectable University; of having attended, subsequently to having taken one of the degrees in medicine, to clinical or practical medicine during two years in a hospital; or, of having attended one year in a hospital, and been engaged for three years in the practice of his profession. Or if he have taken the degree of M.B. in this University, he shall have been engaged during five years in the practice of his profession.

The candidate is examined upon elements of intellectual philosophy, logic, moral philosophy, and medicine. He is allowed to choose the subject of his Thesis. A gold medal worth $50 is awarded to the writer of the best dissertation.

Examinations for honors are allowed upon surgery, medicine, and midwifery. A gold medal valued at $25 is the prize of the successful competitor.

From what I have said you will learn one, and the principal one, of the causes which give Englishmen such rank in the profession of medicine.

The time necessary to become physicians is at shortest more than twice as long as that required in the United States. In order to pass the matriculation, the candidate is obliged to be acquainted with mathematics, natural philosophy or chemistry, the classics, including the English language, history, and geography. In order to attain the degree of Bachelor of Medicine, he submits himself to two other examinations in order to be a candidate, for the first of which he shall have studied four years, nine months of which time he must have dissected. To be eligible for the second examination he is to have attended lectures and hospital practice for two years subsequently to his having undergone the first, to have conducted six labors, and dissected six months.

Six years have been already devoted to his studies, and he has only arrived at the second step, that of M.B. If he would go regularly on and become a Doctor of Medicine, he must continue his attendance upon hospital practice for two years longer. The entire period, from the time that he passes his matriculation examination until he is an M.D., is eight years.

It is sometimes, I am told, performed in less time in the instance of young men who have taken several prizes, and exhibited marked sedulousness in their studies. From the published Regulations of the University College of London, I see no provision of this kind; though, I suppose, it is not to be doubted that there are instances in which the entire eight years' study is not required. Some of the students who are now in attendance at the college express themselves to me as anticipating an apprenticeship of eight years; others, again, are confident of becoming physicians at an earlier period.

Among the eminent medical men of London I have already had the pleasure of meeting Mr. Lawrence and Mr. Liston, the first of whom is surgeon to Bartholomew's and the other to the University Hospital. Mr. Lawrence is an elderly gentleman, of fine person, large head, and expansive forehead, and in blandness and courteousness of manners is a good specimen of the "fine old English gentleman." He visits the hospital twice a week, and I shall make a point of being always present at his clinics. You rarely see so much size and physical strength combined with such rapidity of movement in the same person as you are struck with in Mr. Liston. As he moves about over the city he drives ahead like one putting out fire; and his walk is characteristic of the man, rapid and untiring. When in his carriage

his horses go in a sweeping trot; when he alights from it he runs rather than walks; in the wards of the hospital he glances at a patient and seems to perceive by intuition the nature of his disease and the remedy for it; he asks but few questions, makes a few remarks, enjoins simple and brief directions, and then moves on to another. His business at the hospital dispatched, he runs back to his carriage and whirls away to attend to his large business. But, with all this celerity of motion, he does nothing in a hurry; but whatever he undertakes he performs thoroughly and well. His organization is eminently a happy one. If he were a slothful man, he would soon grow fat, and becoming so, would cease to exert himself sufficiently to maintain that preëminent station which he now justly occupies among the surgeons of this great metropolis. He is a Scotchman by birth, nearly six feet high, of a herculean frame, and still in the prime of philosophical life. He has performed the operation of lithotomy one hundred and forty times, and that of lithotripsy sixty times. I shall have more to say of this great surgeon in my next.

D. W. Y.

JOHNSTON'S NATURAL PHILOSOPHY.

The author of this manual is Professor of Natural Science in the Wesleyan University, and shows by the manner in which he has executed his task, that he understands how to exhibit the truths of science in a clear and striking light. It is an admirable text-book for students in high schools and academies. The publishers are Messrs. Thomas, Cowperthwait & Co. We owe a copy of it to the politeness of Messrs. Morton & Griswold.

TO CORRESPONDENTS.

We are indebted to Drs. Fry, Harper, Affleck, and Gordon for communications, which will appear as fast as we can make room for them.

BOOKS RECEIVED.

Dunglison's Medical Dictionary, sixth edition, much enlarged, Manual of the Diseases of the Teeth, by Robert Arthur, D.D.S., and a Treatise on Fevers by Tweedie and Clymer.

BUFFALO MEDICAL JOURNAL.

This journal has entered upon its second year in not only an enlarged size but a greatly improved dress, a prosperity creditable to its subscribers and industrious editor, and most gratifying to all who take an interest in the medical literature of our country. Among a host of able editors, we know not where we should go to find one more independent, impartial, and zealous than the conductor of the Buffalo Medical Journal and Monthly Review. Dr. Flint holds a ready, pointed, and vigorous pen, and the number of his Journal before us shows how industriously he is using it for the edification of his readers. He is worthy of patronage, and we hope will receive it in large measure.

COMMISSION AGENCY FOR PROFESSIONAL BUSINESS.

Some of our readers may be served by the publication of the following notice:

"*Wm. A. Clendinen, A.M., M.D.*, of Baltimore, Md., intending to proceed at once to Europe, for professional purposes, will establish, in Paris, a Commission Agency, for the purchase of Anatomical Preparations, Models, Casts; Surgical Instruments and Appliances; Scientific Apparatus; Medical, Surgical, and Scientific Books, Plates, and Engravings; matters of professional and artistic interest. The importance of the Schools of Pathology in Paris, and the advantages arising from them for obtaining the most perfect specimens of Morbid Anatomy, are too generally known to need comment.

"Letters should be most legibly directed to Dr. Wm. A. Clendinen, care of Messrs. A. Bininger & Co., New York, or to Messrs. Clark & Kellogg, Baltimore, who will promptly forward them. In no case will orders be attended to, when unaccompanied by satisfactory remittances, for the amount of which, either of the above firms will receipt; but all cash orders, (howsoever small,) will, when explicitly detailed in writing, be promptly executed. The average commission will not exceed 19 per cent.

"Dr. Clendinen offers his professional services to his countrymen abroad."

April 15th, 1846.

PRIVATE MEDICAL TEACHING.

Dr. Gordon, of Clinton College, Tennessee, proposes to give instruction to students of medicine next winter, preparatory to their attendance upon lectures in the public schools. Anatomy and chemistry will be taught in the dissecting room and laboratory, and lectures will be delivered on physiology. The session will commence and close with the lectures in the medical schools. All who know Dr. Gordon's industry and fondness for teaching will look for good students from him. His enterprise commends itself to his young neighbors who are about commencing the study of medicine.

DICTIONARY OF PRACTICAL MEDICINE.

The 14th part of this able publication has reached our bookstores. Its matter is elaborate and rich, insanity, inflammation of the intestines, irritation, itch, and the diseases of the kidneys being among the subjects discussed in it.

TRISMUS NASCENTIUM.

Dr. Sims, of Montgomery, Alabama, has written an article on the *Lock-jaw of Infants*, which appeared in the American Journal of Medical Sciences, and has since been issued by him in a neat pamphlet of 20 pages. This affection, he holds, has its origin in displacement of the cranial bones, during labor, and keeping the child on its back, after birth—as he expresses it, in *bony displacement, and dorsal decubitus.*" The veins of the cerebellum and spinal cord are thus pressed and ligatured. His remedy is a very simple one, and consists in providing "a nice soft pillow of feathers for each infant, and having it changed frequently from side to side, never allowing it to remain for any length of time upon its back." Let it be tried in the region where the disease is so fatal. Dr. Sims mentions a planter in Alabama, who lost five or six negro children from lock-jaw in as many months.

THE SOUTHERN JOURNAL OF MEDICINE.

Favorable notices of this Journal, published at Charleston, have appeared in most of our contemporaries; we have been slow in speaking of it because we were late receiving it—the first number reached us only a few days since. It is edited by J. Lawrence Smith, M.D., and S. D. Sinkler, M.D., and is published bi-monthly, at $4 per annum, payable in advance. Among the contributors to its pages, are to be found Dr. Dickson, Dr. Geddings, and other professors in the Charleston Medical College. The three numbers before us contain some very able original papers, and their whole appearance indicates, that the Journal is to be one of a high order. There is no reason in the world why Charleston, once the literary emporium of America, should not sustain such a journal; and it is perfectly clear that the profession at the South, if it step not forth heartily in support of such an enterprise, will do itself great injustice.

MEDICAL MISCELLANY.

Dr. McDowell has withdrawn from the Missouri Medical Journal, and Dr. Barbour is now its sole editor. The Illinois Medical Journal, much enlarged, and improved in appearance, is to be issued from this time forward bi-monthly. Dr. J. W. Hall has resigned the Chair of the Institutes of Medicine in the St. Louis University, and is succeeded by Dr. Henry M. Bullitt, of Louisville. Robert Chambers, the great bookseller and publisher of Edinburg, has avowed himself the author of "Vestiges of Creation." The authorship has generally been ascribed to Sir Richard Vyvyan; but in an elaborate article in the American Review an attempt was made, some months ago, to prove, by similarity of style, that it was the production of Taylor, the author of Saturday Evening, the Natural History of Enthusiasm, &c. A *second* medical school is spoken of in Memphis, as a department of the Memphis University.

THE

WESTERN JOURNAL

OF

MEDICINE AND SURGERY.

EDITORS.

—

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THOMAS W. COLESCOTT, M. D.

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